



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

APR 30 2014

REPLY TO THE ATTENTION OF:

CERTIFIED MAIL: 7009 1680 0000 7663 8586
RETURNED RECEIPT REQUEST

Mr. William Burke
Raybestos Powertrain, LLC
f/k/a Friction Holdings, LLC
1204 Darlington Avenue
Crawfordsville, Indiana 47933

Re: Risk-Based PCB Cleanup and Disposal Approval - 40 CFR § 761.61(c)
1204 Darlington Avenue, Crawfordsville, Indiana
IND 006 061 477

Dear Mr. Burke:

This letter is in response to the Raybestos Powertrain, LLC September 13, 2013 TSCA (Toxic Substances Control Act) Risk-Based Disposal Approval Application for proposed Polychlorinated Biphenyl (PCB) cleanup at Segment 2, Segment 3, and Segment 4 of the former sewer line at 1204 Darlington Avenue in Crawfordsville, Indiana.

The Application describes the prior in-place abandonment of reinforced concrete pipe (RCP) and an associated distribution box, along with the results of samples collected to justify the cleanup and disposal of PCB remediation wastes at the site in accordance with the requirements of 40 CFR § 761.61(c). The Application was submitted as an option for closure under the Statement of Work for TSCA Injunctive Relief, prepared in connection with the Consent Decree (DOJ No. 90-5-2-1-07285) between the U.S. Department of Justice and Friction Holdings, dated July 25, 2009, and constitutes a request for Risk-Based PCB Cleanup. Approval for risk-based on-site disposal of PCBs is being requested under 40 CFR § 761.61(c) because the impacts are related to a former sewer and because sampling of the abandoned in-place concrete sewer was not performed.

The Application describes that Segment 2 of the former sewer pipe consists of a 140-foot section of 18-inch RCP located directly upgradient from a removed section of pipe at the outfall of Shelly Ditch on the western side of the property. The RCP was grouted in-place and sealed with concrete in September 2001, following the submittal of Removal Work Plan Amendment #2 dated July 27, 2001. All work plans and modifications were approved by EPA on October 14,

2010. Segment 3 consists of a 220-foot section of 18-inch RCP located directly upgradient and to the south from Segment 2 that was abandoned in place by filling with concrete in 1999 and was not required to be closed under the Consent Decree. Segment 4 consists of a collapsed-in-place former distribution box, and in-use metal sewer pipe that previously joined the former RCP system between Segments 2 and 3. The distribution box and piping were cleaned in 1996, and the distribution box was disconnected from the RCP and crushed in-place at that time. The pipe connected to the distribution box from the utility tunnel was connected to the new sewer line located 20-feet west of Segments 2 and 3 of the former RCP sewer line.

The Application indicates that soil sampling along the three segments of the former RCP was performed in November 2010, in accordance with a TSCA Work Plan dated April 22, 2010. PCBs were found in two of the four samples composited from eight borings at the distribution box at 0.34 milligrams per kilogram (mg/kg, or parts per million-ppm) and 61.4 mg/kg. PCBs were also found in one of six composite samples from 20 soil borings installed along Segment 2 of the RCP at 0.065 mg/kg (sample 100' Composite Fill 2 J-R), and one of two composite samples from nine borings installed along Segment 3 of the RCP at 0.16 mg/kg (sample 220' Composite Fill). Both of the samples along Segment 2 and Segment 3 of the RCP in which PCBs were detected were composite samples collected from the fill for the former sewer line and, PCBs were not found in native soils along those segments. All soil samples are below the cleanup levels for low occupancy areas with caps, as specified under 40 CFR § 761.61(a)(4)(i)(B)(3).

At the request of EPA, confirmation wipe sampling was performed to evaluate PCB concentrations on the in-use metal pipe between a utility tunnel and the current sewer near the former distribution box that was previously connected to the impacted sewer system. Sampling results in the Application revealed concentrations of Aroclor 1248 of 29.7 $\mu\text{g}/100\text{ cm}^3$ and 9.3 $\mu\text{g}/100\text{ cm}^3$ in the two samples collected. Both concentrations are below the cleanup criteria for non-porous surfaces in low occupancy areas, as specified under 40 CFR § 761.61(a)(4)(ii). Remaining below ground portions of the utility tunnel are being addressed through decontamination and sampling under a TSCA Completion of Work Report (Report) prepared for the Consent Decree.

The Application includes a draft deed restriction that requires the maintenance of concrete and/or asphalt engineered barriers above impacted materials. The Application indicates that the areas of the former RCP segments and distribution box at the site are limited to low occupancy use and that this restriction will be recorded on the final deed restriction. Removal of the barrier or closed in-place RCP is not permitted under the deed restriction without notification to the Indiana Department of Environmental Management (IDEM) and EPA. The RCP is presumed to be impacted based on concentrations in the soil, and must be managed for disposal as PCB remediation waste in accordance with 40 CFR § 761.61(a)(5)(i)(B) if removed in the future.

Following EPA's review of the September 13, 2013 TSCA Risk-Based Disposal Approval Application, EPA approves the Application under 40 CFR §761.61(c) subject to the following conditions. Specifically, Raybestos Powertrain, LLC:

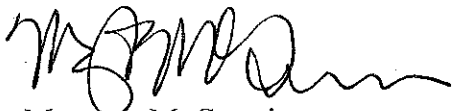
1. will use $\leq 100\text{ mg/kg}$ and $\leq 100\text{ }\mu\text{g}/100\text{ cm}^2$ as the cleanup objectives for total PCBs;

2. will file a deed restriction limiting the area of the distribution box and Segment 2, Segment 3, and Segment 4 of the RCP to low occupancy use as defined in 40 CFR § 761.3, to address residual PCB impacts that will remain in the soil below a cap at levels >25 ppm and ≤100 ppm following remediation. Although an industrial zoning restriction and potable groundwater use restriction are currently in-place for the site, a deed restriction that limits occupancy in such areas to less than 6.7 hours per week will be necessary at the completion of cleanup activities, pursuant to 40 CFR § 761.61(a)(8). The deed notice must be recorded within 60 days of completion of the cleanup, and will notify any potential purchaser of the property in perpetuity that the land has been used for PCB remediation waste disposal and is restricted to use as a low occupancy area, in addition to identifying the applicable cleanup levels; and,
3. will install a cap meeting the requirements of 40 CFR § 761.61(a)(7) and 40 CFR § 761.61(a)(8) to address areas of residual PCBs at concentrations > 25 ppm and ≤100 ppm, pursuant to 40 CFR § 761.61(a)(4)(i)(B)(3).
4. will provide a summary report that describes how you conducted the cleanup in accordance with this approval within 60 days after the completion of the cleanup.

Please note that this approval does not relieve you from your duty to comply with applicable federal, state, and local requirements or the July 25, 2009 Consent Decree. Any departure from the conditions of this approval or the provisions of the September 13, 2013, Application must receive prior written authorization from this office. All conditions of this approval and other applicable requirements of TSCA and its implementing regulations will continue to apply to the Site after any transfer in ownership.

If you have any questions, please contact Joseph Kelly, the Corrective Action Project Manager, by e-mail at Kelly.Joseph@epa.gov or by telephone at (312) 353-2111.

Sincerely,



Margaret M. Guerriero
Director
Land and Chemicals Division

cc: George Ritchotte, IDEM
R. Scott Powell, Lee & Ryan



Via Certified Mail – Return Receipt Requested
7011-3500-0001-8672-7938

January 9, 2013

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Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Ben Franklin Station
Washington, D.C. 20044-7611

Subject: Submittal of a Risk-Based Disposal Application as Part of the Consent Decree
between the United States and Friction Holdings, LLC.
DOJ No. 90-5-2-1-07285

This report and attachments describes work being performed pursuant to the Lodging of a Consent Decree between the United States of America and Friction Holdings LLC dated July 25, 2009. This work includes activities expressed in Statement of Works for CWA, TSCA and RCRA Injunctive Relief, Appendix A, B and C of the Consent Decree.

Enclosed is a Risk-Based Disposal Application and associated documents for management of soils located in the vicinity of the former distribution box and associated piping along the West drive of the Friction Holdings facility.

If you have any questions about work performed or to be performed at the site, please contact our Environmental Manager, Bill F. Burke at (765) 359-2864.

Sincerely,

Timothy J. Pearson

General Manager

I certify under penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that this document and its attachments were prepared either by me personally or under my direction or supervision in a manner designed to ensure that qualified and knowledgeable personnel properly gather and present the information contained therein. I further certify, based on my personal knowledge or on my inquiry of those individuals

immediately responsible for obtaining the information, that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing and willful submission of a materially false statement.

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Via Certified Mail – Return Receipt Requested
7012-2210-0000-0736-4085

September 30, 2013

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Chief, Environmental Enforcement Section
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Subject: Submittal of a TSCA Completion Report as Part of the Consent Decree between the United States and Friction Holdings, LLC.
DOJ No. 90-5-2-1-07285

This report and attachments describes work being performed pursuant to the Lodging of a Consent Decree between the United States of America and Friction Holdings LLC dated July 25, 2009. This work includes activities expressed in Statement of Works for CWA, TSCA and RCRA Injunctive Relief, Appendix A, B and C of the Consent Decree.

This draft TSCA Completion of Work Report provides a description of the all of the activities undertaken to complete the TSCA portion of the Consent Decree and associated Statements of Work including characterization of the effectiveness of prior remedial activities of the following areas:

- Abandoned portions of the 18-inch reinforced concrete pipe (RCP) filled and sealed;
- Collapsed distribution box and associated pipe;
- Pipe leading from the tunnel to the distribution box;
- Former 18-inch culvert area (Grid Sampling Area); and
- Tunnel area located beneath the Plant.

The submittal includes the report, tables and figures associated with this project and is presented in electronic form on a CD. All of the attachments have not been included since most are the actual analytical reports and associated chains of custody. Once this report meets with EPA approval, and any additions or corrections are made, the final report will be resubmitted and include all of the attachments. The final report will also include the

certification that the SOW has been fully implemented pursuant to the CD.

If you have any questions about work performed or to be performed at the site, please contact our Environmental Manager, Bill F. Burke at (765) 359-2864.

Sincerely,

Timothy J. Pearson

General Manager

I certify under penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that this document and its attachments were prepared either by me personally or under my direction or supervision in a manner designed to ensure that qualified and knowledgeable personnel properly gather and present the information contained therein. I further certify, based on my personal knowledge or on my inquiry of those individuals immediately responsible for obtaining the information, that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing and willful submission of a materially false statement.

cc: Mary Hoover
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LEE & RYAN

Construction • Environmental • Engineering • Mechanical

September 27, 2013

Mr. Bill F. Burke
Raybestos Powertrain, LLC
f/k/a Friction Holdings, LLC
1204 Darlington Avenue
Crawfordsville, Indiana 47933

RE: **DRAFT TSCA Completion of Work Report**
Friction Holdings, LLC
1204 Darlington Avenue
Crawfordsville, Indiana 47933
Lee & Ryan Project #: 09019

Dear Mr. Burke:

Lee & Ryan is pleased to provide the enclosed DRAFT TSCA Completion of Work Report for the Friction Holdings, LLC site at 1204 Darlington Avenue, Crawfordsville, Indiana.

Lee & Ryan appreciates the opportunity to provide Raybestos Powertrain, LLC our professional services. If you have questions or comments concerning the information provided above, please contact me at 317-467-6577 or spowell@leeandryan.com.

Very Respectfully,

Lee & Ryan Environmental Consulting, Inc.

R. Scott Powell, P.E.
Director of Technical Services

Cc: File

Chicago

Indianapolis

Atlanta



LEE & RYAN

“DRAFT TSCA COMPLETION OF WORK REPORT”

*Friction Holdings, LLC
1204 Darlington Avenue
Crawfordsville, IN 47933
Lee & Ryan Project #: 09019*

*Prepared for Raybestos Powertrain,, LLC
f/k/a Friction Holdings, LLC*

A Service Disabled-Veteran Owned Small Business

Issued: September 27, 2013

Submitted To:

***Mr. Bill F. Burke
Raybestos Powertrain, LLC
f/ka/ Friction Holdings, LLC
1204 Darlington Avenue
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***Lee & Ryan
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ACRONYM LIST

BGS	below ground surface
CD	Consent Decree
CFR	Code of Federal Regulations
CSX	CSX Corporation, Inc.
DOJ	Department of Justice
FSP	Field Sampling Plan
Friction Holdings	Friction Holdings, LLC
GPR	ground penetrating radar
HSP	Health Safety Plan
IDEM	Indiana Department of Environmental Management
Lee & Ryan	Lee & Ryan Environmental Consulting, Inc.
µg/L	micrograms per liter
µg/100 cm ²	micrograms per 100 square centimeters
mg/kg	milligrams per kilogram
MSDS	material safety data sheets
ppm	parts per million
PCB	polychlorinated biphenyl
QAPP	Quality Assurance Project Plan
RCP	reinforced concrete pipe
RCRA	Resource Conservation and Recovery Act
RBDA	Risk-based Disposal Application
TSCA	Toxic Substance Control Act
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
WP	TSCA Work Plan

1.0 INTRODUCTION

The following report represents the Toxic Substances Control Act (TSCA) Completion of Work Report (Report) for the Friction Holdings, LLC (Friction Holdings) site located at 1204 Darlington Avenue, Crawfordsville, Indiana (Site). The purpose of this Report is to present a detailed summary of completed activities conducted pursuant to the Consent Decree (CD) (DOJ No. 90-5-2-1- 07285) between the U.S. Department of Justice (DOJ) and Friction Holdings, dated July 25, 2009; and subsequent closure of the TSCA portion of the Consent Decree. As stipulated in Section IV of the TSCA scope of work (SOW), a Completion of Work Report is required following completion of the required elements presented in the TSCA Work Plan (WP) and TSCA Field Sampling Plan (FSP) and when relevant cleanup objectives have been attained.

The completed activities described in this Report include those identified in Appendix B of the TSCA SOW (Statement of Work for TSCA Injunctive Relief at the Friction Holdings Crawfordsville, Indiana) and the U.S. Environmental Protection Agency (USEPA) Approved TSCA WP. As stated in the TSCA WP, sampling activities were implemented to characterize the effectiveness of prior remedial activities of the following five subject areas located at the Site:

- Abandoned portions of the 18-inch reinforced concrete pipe (RCP) filled and sealed;
- Collapsed distribution box and associated pipe;
- Pipe leading from the tunnel to the distribution box;
- Former 18-inch culvert area (Grid Sampling Area); and
- Tunnel area located beneath the Plant.

Activities described in this Report were completed in accordance with the USEPA-approved TSCA WP. The TSCA WP, FSP, Quality Assurance Project Plan (QAPP) and Health Safety Plan (HSP) were approved by the USEPA on October 14, 2010.

A detailed description of the characterization completed for the above-referenced structures with a discussion of relevant cleanup objectives is presented in the following sections of this Report. Where applicable, remedial and/or stabilization activities conducted at these structures are also discussed.

As requested by the USEPA in their letter dated June 18, 2013, an explanation of the previous cleaning and disposal activities related to the 18-inch RCP is also provided. This information was previously provided in Section 3.0 of the approved TSCA WP.

2.0 PREVIOUS REMEDIAL ACTIVITIES ASSOCIATED WITH 18-INCH RCP

The remedial actions conducted in regards to the 18-inch RCP storm sewer system have been conducted in phases beginning in 1996 and continued in 1999, 2001, and 2002. A summary of these activities, based on the review of available documents, is provided in the following sections. Specific documentation regarding these efforts including analytical results, figures identifying sampling locations, summary reports, invoices for work completed and disposal records documenting the former 18-inch RCP decontamination efforts were previously submitted to USEPA as part of the 2000 TSCA/Resource Conservation and Recovery Act (RCRA) Subpoena Response. A summary of some of these activities was also provided to USEPA in the Current Conditions Report (Exponent 2004). For brevity purposes, this supporting documentation is not including in this Report.

2.1 Decontamination of the Former 18-inch RCP, 1996

The entire length of the 18-inch RCP including the distribution boxes were pressure washed by a remediation contractor in 1996. The decontamination fluids were containerized and shipped off-site for proper treatment and/or disposal. Confirmation wipe samples were not collected following decontamination efforts. However, storm water discharge from the former 18-inch RCP outfall was sampled following decontamination and analyzed for polychlorinated biphenyls (PCBs). The result of this sampling was non-detect for PCBs at a detection limit of 2.5 micrograms per liter ($\mu\text{g/L}$).



2.2 Abandonment and Replacement of the Former 18-inch RCP, 1999

In response to a Notice of Violation issued by Indiana Department of Environmental Management (IDEM) in November 1998, Raybestos retained a remediation contractor to perform abandonment procedures and replace the former 18-inch RCP with a new system. The abandonment and replacement activities were conducted in February and March 1999 and included the following procedures:

- Installation of a new 18-inch RCP approximately 20 feet west and parallel to the former 18-inch RCP;
- Connection of the new 18-inch RCP to two existing manholes located outside the west side of the West Plant;
- Plugging of the former 18-inch inside each of the existing manholes with concrete;
- Plugging the outfall of the former distribution box; and
- Disconnection and abandonment-in-place of the former distribution box previously connected to the former 18-inch RCP.

Confirmation samples were not collected during the abandonment and replacement activities. However, test pit sampling conducted in 1996 along the former 18-inch RCP did not indicate the presence of PCBs. The test pit samples were reportedly collected from sandy soils at depths of 7 and 8.5 feet.

2.3 Abandonment and Removal of Section of Former 18-inch RCP, 2001

As part of the Shelly Ditch Removal Action, an approximate 20 foot section of the former 18-inch RCP, referred to as Segment 1 in the Current Conditions Report, was removed in 2001. This removal included the portion of the RCP extending from the former outfall back to just underneath the security fence located along the western edge of the property. The removal was conducted as part of the Shelly Ditch Removal Action under supervision of the USEPA. Prior to implementation of the site work, a

Removal Work Plan Amendment #2, dated July 27, 2001 was submitted to USEPA for review and approval.

Removal and abandonment activities were conducted between September 10 and 13, 2001 and in general included the following procedures:

- Removal of approximately 20 feet of the former 18-inch RCP and adjacent soil, measuring from the former outfall up-gradient;
- Collection of waste characterization samples and confirmation soil samples; and
- Grouting in-place an approximately 100 foot section of RCP located directly up-gradient of the removed section.

A total of six confirmation samples were collected during the removal and abandonment activities. Five of the samples were collected from the native soils following removal and/or abandonment, and one was collected from the backfill materials placed back in the excavation. Analytical results of confirmation samples were below the detection limit for total PCBs with the exception of one sample collected from the west sidewall of the north end of the former 18-inch RCP excavation. The result for this sample was 4.4 milligrams per kilogram (mg/kg) total detected PCBs.

Results of the waste characterization, confirmation soil sampling and waste disposal records associated with these activities were included in the *Final Closure Report Shelly Ditch Removal Action* dated August 7, 2003 (GEI 2003), which was previously submitted to USEPA. Additional documentation of these remedial activities including a copy of a previously unpublished draft report (SECOR 2001b) was previously provided to USEPA in the Current Conditions Report (Exponent 2004).

2.4 Additional Remedial Measures at 18-inch RCP Outfall, 2002

Additional remedial action was taken at the location of the former 18-inch RCP outfall during the Shelly Ditch Removal Action implemented in 2002. This remedial action was undertaken as part of the CSX Corporation, Inc. (CSX) Railroad Area remediation which included the following:

- Removal of additional soils in the vicinity of the former outfall;
- Structural stabilization with concrete;
- Placement of a 40-mil PVC liner over the concrete to isolate any remaining contaminants of concern; and
- Final bank stabilization with rip-rap.

Details of these activities were presented in the *Final Closure Report Shelly Ditch Removal Action* dated August 7, 2003 (GEI 2003).

2.5 Remediation of the Former 18-inch RCP Culvert Area

Remedial measures previously conducted at the former 18-inch culvert area were conducted in association with the following phases:

- Decontamination of former 18-inch RCP, 1996;
- Abandonment and replacement of former 18-inch RCP, 1999;
- Abandonment and Removal of Section of Former 18-inch RCP, 2001; and
- Additional Remedial Measures at 18-inch RCP Outfall, 2002.

These remedial activities were previously discussed in Sections 3.2 of the TSCA WP.

Additional investigation activities were conducted within a portion of this subject area in December 2004. This investigative work was conducted under the approval and supervision of USEPA. Prior to implementation of the site work, a *Sampling and Analysis Plan for PCB Concerns* (December 2004) detailing the proposed sampling was prepared and submitted to USEPA. Based on field records for this work, a total of 44 soil borings were installed to an average depth of approximately 7.5 feet. The borings were reportedly installed in the locations identified in Figure 2-1 of the Sampling and Analysis Plan. A total of 88 samples, two samples per boring, were collected and submitted for total PCBs using USEPA Method 8082. According to the lab reports for this sampling, all samples were found to be non-detect for PCBs.

3.0 CHARACTERIZATION OF ABANDONED PORTIONS OF THE 18-INCH RCP

As described in the approved TSCA WP, two sections of the 18-inch RCP were abandon-in-place in 1999. In Appendix B of the Consent Decree, only the 100 foot section, filled and sealed in 2001, was identified as one of the subject areas to be characterized; however, Friction Holdings included an additional 220 foot section (referred to as Segment 3 in the Current Conditions Report, [Exponent 2004]) of the 18- inch RCP as part of the characterization activities. **Figure 1** provides a layout of the former 18-inch RCP.

The 18-inch RCP was previously used to convey storm-water collected from the facility roof drains as well drains located in the utility tunnel to the culvert area located along the west-central portion of the Site. The former 18-inch RCP was previously impacted with PCB containing oils.

Segment 2 of the RCP was filled with concrete in 2001 and portions of Segment 3 were reportedly filled with concrete in 1999. A detailed summary of previous remedial activities conducted in association with the 18-inch RCP, including decontamination, abandonment, and sampling efforts, is provided in Section 3.0 of the TSCA WP.

Characterization and further encapsulation activities of the abandoned 18-inch RCP, as described in the TSCA WP, is presented in the following sections.

3.1 Approximate 100-foot Section of the 18-inch RCP (Segment 2)

On November 10, 2010, a total of 20 soil borings (Borings 100-A thru 100-T) were installed along this section of the former 18-inch RCP. The borings were installed by direct-push methodology using a Geoprobe®. Each boring was continuously sampled and logged to a minimum depth of eight feet. A total of six composite samples (three each of the pipe bedding and the native soils) were collected for off-site analysis for total PCBs using USEPA Method 8082. All sampling was conducted per the specifications presented in the approved TSCA FSP and QAPP. Based on the analytical results, PCB Aroclor 1254 was detected at a concentration of 0.065 mg/kg within the composite of the pipe bedding collected from borings J through R. PCBs were not detected above the method detection limit in any of the other samples. A summary of the samples including the results are presented in **Table 1**. Boring locations from which the composite samples were collected are presented in **Figure 1**. The analytical reports for this sampling event are included in **Attachment A** of this Report as an e-file on a compact disc.

3.2 Approximate 220-foot Section of the Former 18-inch RCP (Segment 3)

On November 10, 2010, a total of nine soil borings (Borings 200-A thru I) were installed along this section of the former 18-inch RCP. The borings were installed by direct-push methodology using a Geoprobe®. Each boring was continuously sampled and logged to a minimum depth of six feet. A total of two composite samples (one each of pipe bedding and native soils) were collected for off-site analysis for total PCBs using USEPA Method 8082. All sampling was conducted per the specifications presented in the approved TSCA FSP and QAPP. Based on the analytical results, Aroclor 1248 was detected at a concentration of 0.16 mg/kg within the composite of the fill material from this section of the former 18-inch RCP. Aroclor 1248 was also detected at a concentration of 0.084 mg/kg in the duplicate of this composite. PCBs were not detected in the native soil composite sample. A summary of the samples including the results are presented in **Table 2**. Boring locations from which the composite

samples were collected are presented in **Figure 1**. The analytical reports for this sampling event are included in **Attachment A** of this Report as an e-file on a compact disc.

3.3 Verification of Filling and Sealing of the Former 18-inch RCP

Filling and sealing of portions of the former 18-inch RCP, referred to as Segment 3 in the Current Conditions Report (Exponent 2004), was conducted as part of the characterization activities. Upon inspection of a representative portion of this section of the former 18-inch RCP, it was determined that the majority of this former pipe was not filled. Only small segments of the RCP near the existing manways were filled with concrete. However, no evidence of liquids and/or sludge that would require removal was observed in the pipe. On November 11, 2010 a flowable grout-cement mixture was used to fill the remaining open areas of this section of the 18-inch RCP.

3.4 Comparison of Characterization Sampling to Relevant Cleanup Objectives

The constituent of concern associated with the abandoned 18-inch RCP is total PCBs. Several published Cleanup Objectives or Cleanup Levels for PCBs appear to be relevant for the abandoned 18-inch RCP portion of the Site. These Cleanup Objectives include:

- The previously proposed cleanup level for soils, as documented in the TSCA WP;
- USEPA established cleanup objectives as identified in the PCB Spill Rule; and
- Indiana Department of Environmental Management (IDEM) established screening levels.

Each of these cleanup objectives are based on projected exposure scenarios. A discussion of each of these is presented below.

Cleanup Level Proposed in the TSCA WP: As identified in the approved TSCA WP, the proposed cleanup for PCBs in soils at the Site was 10 mg/kg. This cleanup objective was established from comparison to the Shelly Ditch Removal Action project site that is located directly adjacent and down-gradient of the Site. The cleanup level of 10 mg/kg (total average with no one confirmation sample exceeding 25 mg/kg) was approved by the USEPA for closure of the Shelly Ditch Project Site, which included mostly residential properties; therefore, was proposed as a Relevant Cleanup Objective for this Site.

USEPA Cleanup Levels established in 40 CFR 761: As described in 40 Code of Federal Regulations (CFR) 761.61, cleanup levels are based on the type of material and the potential exposure to PCBs remaining after cleanup is completed. The soils impacted with low levels of PCBs located adjacent the former 18-inch RCP are considered bulk PCB remediation waste in a low occupancy area. According to 40 CFR 761.61(a)(4)(B), the cleanup level for bulk PCB remediation wastes in a low occupancy area is equal to or less than 25 parts per million (ppm); and from greater than 25 ppm to 100 ppm if the site is covered with a cap meeting the requirements of paragraphs 40 CFR 761.61(a)(7) and (a)(8).

IDEM PCB Screening Levels The IDEM has established screening levels for PCBs in soils which are published within the *Remediation Closure Guide* dated March 22, 2012. These screening levels include direct contact of soil exposure scenarios for residential use, commercial/industrial use and excavation workers.

The excavation worker exposure scenario would most-likely apply to the soils located adjacent the 18-inch RCP. The IDEM has established a screening level of 460 mg/kg total PCBs for the excavation worker soil direct contact scenario.

Verification sample results for soils collected adjacent the abandoned portions of the former 18-inch RCP were found to be non-detect to 0.16 mg/kg. These sample results are below the relevant clean-up objectives.

3.5 Risk-Based Disposal Application

In lieu of additional remediation efforts, a Risk-Based Disposal Application (RBDA) was prepared for portions of the Site including the abandoned in place 18-inch RCP. A RBDA including the former 18-inch RCP was originally submitted to the USEPA in January 2013. The RBDA was revised per USEPA comments and re-submitted to USEPA in September 2013. The RBDA was still under review by USEPA at the time of submittal of this Completion Report. A copy of the RBDA is included in **Attachment B**.

3.6 Proposed Physical and Institutional Controls Mechanisms

Although characterization sampling results conducted as part of the TSCA SOW indicated that the concentrations of PCBs in soils adjacent the former 18-inch RCP were below the clean-up objectives and/or applicable clean-up levels, Friction Holdings intends to restrict access to the former 18-inch RCP by a combination of a cap (constructed in accordance with 40 CFR 761.61(a)(7)); and a deed restriction prepared in accordance with 40 CFR 761.61(a)(8). A combination asphalt and concrete cap is already in place for the entire section of the former 18-inch RCP.

The deed restriction, among other things, will be designed to restrict access to the 100 and 220 foot sections of the former 18-inch RCP in perpetuity. A copy of the proposed Deed Restriction and the details of the associated site restrictions are provided as **Attachment B**.

4.0 DISTRIBUTION BOX AND ASSOCIATED PIPE CHARACTERIZATION

The former distribution box and associated piping were reportedly located along the 18-inch RCP just west of the northwest section of the boiler room (see TSCA WP Figure 2 for the previous location of the distribution box). The distribution box was previously connected to a sump located directly to the east, which in turn was connected to a sump located in the utility tunnel located beneath the West Plant. In the past, oil and condensate collected in a series of floor drains located in the tunnel was pumped from the tunnel to a sump located outside the west side of the boiler room. This sump reportedly acted as an oil/water separator and directed water to the distribution box which in turn was connected to the 18-inch RCP.

The distribution box was reportedly crushed in-place and replaced with a new sump during remedial activities conducted in 1999. A new sump is located at the location of the old sump. This new sump is connected to the tunnel via the former piping and is designed to collect and convey condensate from the tunnel to the settling basin.

Characterization of the former distribution box and associated piping, as described in the TSCA WP, as well as a comparison to relevant cleanup objectives is presented in the following sections of this Report.

4.1 Verification Sampling November 11, 2010

On November 11, 2010, a total of eight soil borings were installed within the vicinity of the former distribution box and along the associated former piping. Specifically, three of the borings (Borings DB-Comp-1-A thru DB-Comp-1C) were installed within the vicinity of the pipe extending from the tunnel; and five borings were installed along the perimeter of the defined area of the collapsed distribution box. Prior to implementation of the characterization sampling, a contractor specializing in ground penetrating radar (GPR) services was retained to verify the presumed location of the remnants of the former distribution box and the existing piping extending from the new sump. The results of the GPR survey indicated that the location of the former distribution box and associated piping were as previously indicated by facility records.

The characterization borings were installed by direct-push methodology using a Geoprobe®. Each boring was continuously sampled and logged to a minimum depth of eight feet. One boring (Boring DB Comp 1-B) was completed to a total depth of twelve feet. This boring was installed to a total of twelve feet in an effort to further characterize the soils and lithology below the eight foot sampling depth. A total of four composite samples (two each of the fill and native soils associated with each structure) were collected for off-site analysis for total PCBs using USEPA Method 8082. All sampling was conducted per the specifications presented in the approved TSCA FSP and QAPP.

Based on the analytical results of the characterization sampling, PCB Aroclor 1248 (Aroclor 1248) was detected at a concentration of 0.34 mg/kg within the composite of the fill material from the piping and 0.33 mg/kg from the duplicate of this material. This material was collected from a depth of four feet below ground surface (BGS). Aroclor 1248 was also detected at a concentration of 61.4 mg/kg from the composite sample of the soils located along the perimeter of the former distribution box. This material was collected from a depth of eight feet. PCBs were not detected (above the method detection limit) in the composite sample of fill from adjacent the distribution box and/or within the native soil composite samples from adjacent the pipe (Borings DB-Comp-1-A thru DB-Comp-1C). A summary of the samples including the results are presented in **Table 3**. Boring locations from which the composite

samples were collected are presented in **Figure 2**. The analytical reports for this sampling event are included in **Attachment A** of this Report as an e-file on a compact disc.

4.2 Comparison of Verification Sampling to Relevant Cleanup Objectives

The constituent of concern associated with the former distribution box is total PCBs. Several published Cleanup Objectives or Cleanup Levels for PCBs appear to be relevant for the distribution box area of the Site. These Cleanup Objectives include:

- The previously proposed cleanup level for soils, as documented in the TSCA WP;
- USEPA established cleanup objectives as identified in the PCB Spill Rule; and
- Indiana Department of Environmental Management (IDEM) established screening levels.

Each of these cleanup objectives are based on projected exposure scenarios. A discussion of each of these is presented below.

Cleanup Level Proposed in the TSCA WP: As identified in the TSCA WP, the proposed cleanup for PCBs in soils at the Site was 10 mg/kg. This cleanup objective was established from comparison to the Shelly Ditch Removal Action project site that is located directly adjacent and down-gradient of the Site. The cleanup level of 10 mg/kg¹ was approved by the USEPA for closure of the Shelly Ditch Project Site, which included mostly residential properties; and therefore, was proposed as a Relevant Cleanup Objective for this Site.

Results from the characterization sampling indicated the presence of Aroclor 1248 at a concentration of 61.4 mg/kg from the soils located within the vicinity of the former distribution box at a depth of eight feet BGS.

USEPA Cleanup Levels established in 40 CFR 761: As described in 40 CFR 761.61, cleanup levels are based on the kind of material and the potential exposure to PCBs left after cleanup is completed. The PCB-impacted soils remaining in the vicinity of the former distribution box and associated piping are best described as bulk PCB remediation waste. Additionally, due to the depth of the impacted soils (eight feet BGS), the location of the soils would meet the definition of a low-occupancy area as described in 40 CFR 761.3. According to 40 CFR 761.61(a)(4)(B), the cleanup level for bulk PCB remediation wastes in a low occupancy area is equal to or less than 25 ppm; and from greater than 25 ppm to 100 ppm if the site is covered with a cap meeting the requirements of paragraphs 40 CFR 761.61(a)(7) and (a)(8).

Results from the characterization sampling indicated the presence of Aroclor 1248 at a concentration of 61.4 mg/kg from the soils located within the vicinity of the former distribution box at a depth of eight feet BGS. This concentration exceeds the cleanup level of 25 ppm for a low occupancy area. However, the detected concentration does not exceed the cleanup level of 25 ppm to 100 ppm if the area is covered by a cap. The entire area of the former distribution box has been covered by concrete since abandonment, and a three foot thick clay layer was observed above the impacted materials during Site characterization activities.

IDEM PCB Screening Levels The IDEM has established screening levels for PCBs in soils, which are published within the *Remediation Closure Guide* dated March 22, 2012. These screening levels include direct contact of soil exposure scenarios for residential use, commercial/industrial use and excavation

¹ Cleanup level was 10 mg/kg with no one sample to exceed 25 mg/kg.

workers. The excavation worker exposure scenario would most-likely apply to the soils located adjacent the 18-inch RCP. The IDEM has established a screening level of 460 mg/kg total PCBs for the excavation worker soil direct contact scenario. Results from the characterization sampling did not exceed this screening level.

4.3 Risk-Based Disposal Application

In lieu of additional remediation efforts, a Risk-Based Disposal Application (RBDA) was prepared for portions of the Site including the area of the former distribution box. A RBDA that included the former 18-inch RCP was originally submitted to the USEPA in January 2013. The RBDA was revised per USEPA comments and re-submitted to USEPA in September 2013. USEPA review of the RBDA is still underway at the time of submittal of this Completion Report. A copy of the RBDA is included in **Attachment B**.

4.4 Proposed Physical and Institutional Controls Mechanisms

Based on characterization sampling results and the evaluation of risks associated with this area of the Site, Friction Holdings intends to manage the on-site disposal of remediation waste associated with the former distribution box by the combination of a cap and a deed restriction. A concrete cap currently covers the entire impacted area of the former distribution box. However, a portion of the concrete is cracked and/or damaged. Therefore, Friction Holdings intends to replace the existing concrete overlying the former distribution box area with a concrete cap that meets the design requirements presented in 40 CFR 761.61(a)(7) including a minimum thickness of six inches.

In addition to the installation of the required cap; Friction Holdings intends to record a deed restriction in accordance with the requirements stated in 40 CFR 761.61(a) (8) for the Site. A copy of the proposed Deed Restriction is provided as **Attachment B**. It should be noted that once the concrete cap is replaced, disturbances to this area including excavation will be restricted as described in the deed restriction.

5.0 CHARACTERIZATION OF THE PIPE(S) FROM THE TUNNEL TO THE DISTRIBUTION BOX

As described in the USEPA-approved TSCA WP, the distribution box and associated piping was cleaned during the overall utility tunnel and former 18-inch RCP cleaning and abandonment activities conducted in 1996. Following the cleaning operations, the former distribution box was reportedly disconnected from the tunnel and the former 18-inch RCP system and crushed in place. The pipe leading from the tunnel to the former distribution box was subsequently connected to a newly installed sump located to the west of the boiler room and continues to be in service. This pipe is located completely underground; and runs from a sump located in the utility tunnel to the north under the floor of the manufacturing plant where it turns to the west and runs under the asphalt pavement and boiler room floor to the newer sump.

Characterization sample results associated with the pipe leading from the tunnel to the distribution box are divided into two categories: characterization soil sampling and the interior wipe sampling. Characterization soil sampling was conducted at accessible areas west of the boiler room where the existing pipe connects to the sump. Due to the inaccessibility of the majority of the pipe leading from the tunnel to the exterior sump, additional characterization sampling including wipe sampling of the interior of the existing pipe was also conducted. This included the collection of wipe samples from the interior of the pipe at accessible portions of the pipe at both ends (east and west points). An evaluation of each of these sample results and comparison to applicable clean-up levels are presented below.

5.1 Verification Sampling November 11, 2010

Upon further investigation of the piping from the tunnel to the distribution box, it was determined that the majority of this piping is located beneath the West Plant floor and the existing boiler room and was not accessible for exterior sampling except for the portions located in the vicinity of the former distribution box. The remaining section of the piping located outside the west side of the boiler room was characterized as part of the former distribution box and associated piping investigation activities. Based on the analytical results of the characterization sampling, Aroclor 1248 was detected at a concentration of 0.34 mg/kg within the composite of the fill material from the piping and 0.33 mg/kg from the duplicate of this material. This material was collected from a depth of four feet BGS. Further details regarding these investigation activities are presented in the distribution box and associated piping section of this Report. A summary of the samples including the results are presented in **Table 3**. Boring locations from which the composite samples were collected are presented in **Figure 2**. The analytical reports for this sampling event are included in **Attachment A** of this Report as an e-file on a compact disc.

5.2 Wipe Sampling of Interior of Pipe, January 2013

The majority of the pipe previously connected to distribution box remains active and is currently connected to a sump located outside the west side of the boiler room. Based on further discussions with USEPA regarding the continued use of this pipe, sampling of the interior surfaces of this pipe was conducted in January 2013. A total of two wipe samples were collected from the interior of the pipe. One wipe sample (Pipe East) was collected from the interior of the pipe at a point where the pipe goes under the West Plant Floor from the utility tunnel; and an additional wipe sample was collected from the interior of the pipe at a point where the pipe enters the sump located outside the boiler room. All sampling was conducted per the specifications presented in the approved TSCA FSP and QAPP. Based

on the analytical results, PCB Aroclor 1248 was detected at a concentration of 29.7 micrograms per 100 square centimeters ($\mu\text{g}/100\text{cm}^2$) for the interior east pipe (closest to tunnel) location and $9.3 \mu\text{g}/100\text{cm}^2$ at the interior west pipe (entering exterior sump) location. A summary of the samples including the results are presented in **Table 4**. The analytical reports for this sampling event are included in **Attachment A** of this Report.

5.3 Comparison of Verification Sampling to Relevant Cleanup Objectives

The constituent of concern associated with the pipe leading from the tunnel to the existing sump located in the vicinity of the former distribution box is total PCBs. Several published Cleanup Objectives or Cleanup Levels for PCBs appear to be relevant for evaluating both the soils located in the vicinity of the pipe and continued use of the pipe. These Cleanup Objectives include:

- The previously proposed cleanup level for soils, as documented in the TSCA WP;
- USEPA established cleanup objectives as identified in the PCB Spill Rule; and
- IDEM established screening levels.

Each of these cleanup objectives are based on projected exposure scenarios. A discussion of each of these is presented below.

5.3.1 PCB-impacted Soils Located Adjacent to Pipe

Cleanup Level Proposed in the TSCA WP: As identified in the TSCA WP, the proposed cleanup for PCBs in soils at the Site is 10 mg/kg. This cleanup objective was established from comparison to the Shelly Ditch Removal Action project site that is located directly adjacent and down-gradient of the Site. The cleanup level of 10 mg/kg^2 was approved by the USEPA for closure of the Shelly Ditch Project Site which included mostly residential properties; and therefore was proposed as a Relevant Cleanup Objective for this Site.

Results from the characterization sampling indicated the presence of Aroclor 1248 at a concentration of 0.34 mg/kg from the soils located adjacent the portion of pipe located exterior of the boiler room (within the vicinity of the former distribution box).

USEPA Cleanup Levels established in 40 CFR 761: According to 40 CFR 761.61(a)(4), the PCB-impacted soils remaining in the vicinity of the in-use pipe (portion located west of the boiler) are best described as bulk PCB remediation waste. Additionally, due to the depth of the impacted soils (four to six feet BGS), the location of the soils would meet the definition of a low-occupancy area as described in 40 CFR 761.3. According to 40 CFR 761.61(a)(4)(B), the cleanup level for bulk PCB remediation wastes in a low occupancy area is equal to or less than 25 ppm; and from greater than 25 ppm to 100 ppm if the site is covered with a cap meeting the requirements of paragraphs 40 CFR 761.61(a)(7) and (a)(8).

Based on the analytical results of the characterization sampling conducted of soils located adjacent the west end of this pipe, PCB Aroclor 1248 was detected at a concentration of 0.34 mg/kg within the composite of the fill material from the piping and 0.33 mg/kg from the duplicate of this material. Since the subject area is located in a low occupancy area and covered by a concrete cap, the applicable clean-up level for this material according to 40 CFR 761.61 is greater than 25 ppm to 100 ppm.

² Cleanup level was 10 mg/kg with no one sample to exceed 25 mg/kg.

IDEM PCB Screening Levels: The IDEM has established screening levels for PCBs in soils which are published within the *Remediation Closure Guide* dated March 22, 2012. These screening levels include direct contact of soil exposure scenarios for residential use, commercial/industrial use and excavation workers.

The excavation worker exposure scenario would most-likely apply to the soils located adjacent the pipe. The IDEM has established a screening level of 460 mg/kg total PCBs for the excavation worker soil direct contact scenario.

Verification sample results for soils collected adjacent the pipe located exterior of the boiler room were found contain Aroclor 1248 at a concentration of 0.34 mg/kg. These sample results are below the relevant clean-up objectives.

5.3.2 In-use Metal Pipe

USEPA Cleanup Levels established in 40 CFR 761: Due to the fact that this pipe remains active, additional characterization sampling including the collection of wipe samples from the interior of the pipe was conducted per the request of USEPA. Based on the analytical results, PCB Aroclor 1248 was detected at a concentration of $29.7 \mu\text{g}/100 \text{ cm}^2$ for the interior surface of the east pipe location (adjacent the tunnel) and $9.3 \mu\text{g}/100 \text{ cm}^2$ at the interior west pipe location (within the exterior sump).

The in-use metal pipe formerly connected from the tunnel to the distribution box (currently connected from the tunnel to the exterior sump) is best described as non-porous surface. Additionally, due to the location of the pipe (mostly under the facility flooring) would meet the definition of a low-occupancy area as described in 40 CFR 761.3. According to 40 CFR 761.61(a)(4)(ii), the cleanup level for non-porous surfaces in a low occupancy area is less than $100 \mu\text{g}/100 \text{ cm}^2$. Based on wipe sampling results from the interior of the pipe, PCBs were detected at a concentration of $9.3 \mu\text{g}/100 \text{ cm}^2$ and $29.7 \mu\text{g}/100 \text{ cm}^2$, which are lower than the cleanup level of $<100 \mu\text{g}/100 \text{ cm}^2$.

6.0 SAMPLING OF THE GRID DISCUSSED IN THE CURRENT CONDITIONS REPORT BEYOND THE IDENTIFIED PROPERTY BOUNDARY

The former 18-inch culvert area is located along the west property line near the current storm water outfalls for the facility. This area represents the section of the former 18-inch RCP that was removed in 2001 as part of remedial activities associated with the Shelly Ditch Removal Action. This portion of the 18-inch RCP was referred to as Segment 1 in the 2004 Current Conditions Report and included a section measuring approximately 20 feet. The location of this area within the Site is shown in **Figure 1**. A detailed summary of remedial activities conducted in association with the former 18-inch culvert area including decontamination, removal and sampling efforts is provided in Section 2.0 of this Report.

As indicated in Appendix B of the Consent Decree, completion of the grid sampling discussed in the Current Conditions Report (Exponent 2004) and as identified in Exponent document titled "*Figure 2-1. Proposed sampling locations in the 18-in. RCP area*" (dated Dec 07, 2004) was conducted as part of the characterization of the Site. Based on a review of the field notes and data collected during completion of the initial grid sampling conducted in December 2004, 16 boring locations were remaining to be sampled. It should be noted that the TSCA WP identified 15 proposed sampling locations. However, 16 locations were identified once the grid was laid out. A description of the sampling procedures and results are provided in the following sections.

6.1 Verification Sampling Grid-Sampling Area (November 2010)

On November 11, 2010, a total of 16 soil borings were installed along the grid located beyond the identified property boundary as described in the Current Conditions Report (Exponent 2004). The borings were installed by a combination of a hand-auger and post-hole digger. The depths of the borings ranged from two to five feet in depth. A total of 16 grab samples (one from each remaining grid point) were collected for off-site analysis for total PCBs using USEPA Method 8082. All sampling was conducted per the specifications presented in the approved TSCA FSP and QAPP.

Based on the analytical results, PCB Aroclor 1254 was detected at four locations (I-47, I-52, I-55 and I-57) at a concentration ranging from 0.051 to 3.0 mg/kg and from a depth ranging from 2 to 5 feet. No other PCBs were detected above the method detection limit in the remaining samples. A summary of the samples including the results are presented in **Table 5**. Boring locations from which the composite samples were collected are presented in **Figure 3**.

6.2 Comparison of Verification Sampling to Relevant Cleanup Objectives

The constituent of concern associated with the Grid-Sampling Area is total PCBs. Several published Cleanup Objectives or Cleanup Levels for PCBs appear to be relevant for the Grid-Sampling portion of the Site. These Cleanup Objectives include:

- The previously proposed cleanup level for soils, as documented in the TSCA WP;
- USEPA established cleanup objectives as identified in the PCB Spill Rule; and
- IDEM established screening levels.

Each of these cleanup objectives are based on projected exposure scenarios. A discussion of each of these is presented below.

Cleanup Level Proposed in the TSCA WP: As identified in the TSCA WP, the proposed cleanup for PCBs in soils at the Site was 10 mg/kg. This cleanup objective was established from comparison to the Shelly Ditch Removal Action project site that is located directly adjacent and down-gradient of the Site. The cleanup level of 10 mg/kg was approved by the USEPA for closure of the Shelly Ditch Project Site; and therefore was proposed as a Relevant Cleanup Objective for this Site.

USEPA Cleanup Levels established in 40 CFR 761: As described in 40 CFR 761.61, cleanup levels are based on the kind of material and the potential exposure to PCBs left after cleanup is completed. The soils potentially impacted with low levels of PCBs located within the Grid-Sampling Area are considered bulk PCB remediation waste located in a low occupancy area. The Cleanup Level for a bulk PCB remediation waste located in low occupancy area is equal to or less than 25 ppm (40 CFR 761.61(a)(4)(i)(B)).

IDEM PCB Screening Levels: The IDEM has established screening levels for PCBs in soils which are published within the Remediation Closure Guide dated March 22, 2012. These screening levels include direct contact of soil exposure scenarios for residential use, commercial/industrial use and excavation workers. The IDEM's screening level for each of these exposure scenarios are as follows:

- Residential Direct Contact Soil = 3.1 ppm;
- Commercial/Industrial Direct Contact Soil = 7.4 ppm; and
- Excavation Worker Direct Contact Soil = 460 ppm.

The excavation worker exposure scenario would most-likely apply to the soils located within Grid Sampling Area.

Verification samples results for samples collected within the Grid Sampling portion of the Site were found to be non-detect except for the following four samples: I-47, I-52, I-55 and I-57. PCB Aroclor 1254 was detected at a concentration ranging from 0.051 to 3.0 mg/kg at a depth range of two to five feet BGS at these locations. These sample results are below the relevant clean-up levels and/or objectives discussed above.

6.3 Physical Controls Mechanisms

In August 2011, Friction Holdings installed a cement/grout cap along the western perimeter of the Site where low-level (0.051 to 3.0 mg/kg) PCBs were detected within the grid sampling area. The cement/grout was installed from the top of the bank near the existing fence downgradient to the low lying drainage area at the base of slope. The cement/grout was deposited by pressurized piping directly from cement trucks designed for this type of application. The cement/grout was spread throughout the area with hand tools to an approximate thickness of one foot. The cement/grout material was installed in order to stabilize the soils located along the bank and subsequently to eliminate erosion of soils along the bank.

7.0 CHARACTERIZATION OF UTILITY TUNNEL

Following is a description of sampling, cleaning and encapsulation activities conducted to date within the utility tunnel per the USEPA approval of the TSCA WP developed under the Consent Decree (DOJ No. 90-5-2-1-07285). A description of each activity is presented in chronological order for work completed from November 2010 to July 2012.

7.1 Verification Wipe Sampling Event of Tunnel (November 8 and 9, 2010)

Wipe sampling in the utility tunnel located beneath the West Plant was completed on November 8 and 9, 2010. A total of 221 samples were collected per the specifications provided in the approved TSCA WP and associated FSP and QAPP. Ten individual wipe samples were collected in a designated section of the tunnel floor then placed into one bag for submittal to the laboratory for compositing and analysis. The individual wipe samples were placed in separate sample containers, grouped in numbers of 10 or less, and submitted to the laboratory for compositing and analysis. A total of 27 composite samples were analyzed per USEPA Method 8082. Based on the analytical results, PCBs were detected in each of the composite samples ranging from 43.7 to 4,270 $\mu\text{g}/100\text{ cm}^2$. The wipe sampling locations with total PCB results are presented on **Figure 4**. A copy of the analytical report for the 1st round of tunnel wipe sampling is included as **Attachment A**.

7.2 Sampling of Hydraulic Oil and Wipe Sampling of the Exterior of Furnace Cylinders (February 23, 2011)

In an effort to identify a potential source of the remaining PCB-containing oils, the hydraulic oil used in the furnaces was sampled on February 23, 2011. Hydraulic oil is stored in two 300-gallon capacity reservoirs located in the tunnel. The oil is pumped and circulated through the furnaces located above the tunnel. The furnaces are used for parts manufacturing. The hydraulic oil is pumped throughout the furnaces using compression cylinders. Each furnace utilizes between two to six cylinders.

One grab sample of hydraulic oil was collected from the east reservoir and one grab sample was collected from the west reservoir. Each of the oil samples were analyzed for total PCBs per USEPA Method 8082. Results from the representative oil samples were found to be non-detect for PCBs.

For each furnace, wipe samples were collected from the exteriors of each cylinder and composited into one sample (i.e. if the furnace had six cylinders then the representative sample result includes a composite of the six cylinders). In sum, two grab samples of hydraulic oil and 32 composite wipe samples were collected and analyzed during this evaluation.

The wipe sampling of the furnace cylinders was not originally included in the approved TSCA Work Plan; however, it was determined that the additional sampling would be beneficial in determining if remaining surfaces within the tunnel were impacted with PCB-containing oil. Wipe sampling and analytical methods associated with the cylinder sampling were conducted per the specifications provided in the approved TSCA WP and associated QAPP. Based on the analytical results, PCBs were detected in each of the composite samples ranging from 23.2 to 2,110 $\mu\text{g}/100\text{ cm}^2$. Wipe sampling locations with total PCB results are presented in **Figure 5**.

7.3 Decontamination of Tunnel and Furnace Cylinders (June 28 to July 12, 2011)

Decontamination of the utility tunnel, per the specifications identified in Subpart S 761.375 as intended for dirty grease- and grime-coated surfaces, included a detergent wash-rinse followed by a solvent wash-rinse from June 28 to July 12, 2011. A summary of the cleaning procedures is provided below:

- Physical removal of obvious standing oil and dirt & debris from the floors of the work area and placement into open top 55-gallon drums for subsequent off-site disposal;
- Applied floor dry to absorb any remaining oil residues;
- Broomed in floor dry and placed the material into open top 55-gallon drums for subsequent off-site disposal;
- Wet floor with surfactant/degreasing solution and scrub each one-foot square area for at least one minute, rinse with tap water, and collect and place the tap water into 55-gallon open top drums for subsequent off-site disposal;
- Applied Capsur® solvent solution to the entire floor surface of the work area, and then allowed it to stand for at least one-minute;
- Wiped up Capsur® until the floor was dry with absorbent pads, and then placed the pads into 55-gallon drums for later disposal;
- Repeat the application of Capsur® solution, let stand for at least one-minute, and then wiped the floor dry again with absorbent pads; and
- Applied Capsur® solution two times on the exterior surface of each furnace cylinder before wiping with absorbent pads. The pads were subsequently placed in a 55-gallon drum for proper disposal.

The Capsur® material is an industrial solvent that has been formulated specifically for the cleaning of PCB oil from surfaces such as concrete and equipment. See **Attachment C** for manufacturer's specifications and a Material Safety Data Sheet (MSDS) for Capsur®.

The analytical results of the wipe samples collected from the furnace cylinders prompted the replacement of hydraulic oil in all the furnace cylinders and was also conducted during this time-frame (July 1, 2011). Representative samples from the new hydraulic oil were collected from the each of the two main oil reservoirs (marked as east and west on the sample Chain of Custody) following oil replacement and circulation. Based on the analytical results, PCBs were not detected in either of the oil samples from these reservoirs. An additional oil sample was collected from a separate reservoir used to collect and re-circulate oil from the drip pans at this time (indicated as the north reservoir on the sample Chain of Custody). Based on the sample results, Aroclor 1248 was detected in the representative oil sample at 4.6 mg/kg. Following receipt of the sample results, the PCB containing north reservoir was removed from service and replaced with a new reservoir. The drip pans and associated tubing was also replaced with new materials throughout the tunnel. The reservoir, and drip pans and associated tubing were disposed properly by Friction Holdings. A copy of the analytical report for the representative oil sampling is included as **Attachment A**.

7.4 2nd Round of Verification Wipe Sampling Event (July 18 and 19th, 2011)

A second round of verification wipe sampling of the floor surfaces of the utility tunnel was completed on July 18 and 19, 2011, immediately following the decontamination activities described above. The sampling was conducted per the specifications provided in the approved TSCA WP and associated FSP and QAPP. The individual wipe samples were placed in individual sample containers, grouped in numbers of 10 or less, and submitted to the laboratory for compositing and analysis. A total of 27

composites were analyzed per USEPA Method 8082. Based on the analytical results, PCBs were detected in each of the composite samples ranging from 5.6 to 448 $\mu\text{g}/100\text{ cm}^2$. Wipe sampling locations with total PCB results are presented in **Figure 6**. A copy of the analytical report for the 2nd round of tunnel wipe sampling is included as **Attachment A**.

7.5 2nd Cleaning of Tunnel and Subsequent 3rd Round Verification Wipe Sampling Event (November 9 and 10, 2011)

A second round of cleaning and sampling was conducted of the tunnel area was conducted on November 9 and 10, 2011. This cleaning focused on the areas found to contain PCBs at concentrations above 100 $\mu\text{g}/100\text{ cm}^2$ (proposed cleanup goal for a low occupancy area), based on the previous round of wipe sampling. The cleaning procedures employed were the same as the initial cleaning except for the application of the floor absorbent and bulk material removal. Any standing oil was removed by plant personnel prior to application of the detergent and Capsur®.

A third round of verification wipe sampling of the floor surfaces of the utility tunnel was completed on November 10, 2011. The sampling was conducted immediately following the cleaning procedures described above and was conducted per the specifications provided in the approved TSCA WP and associated FSP and QAPP. The individual wipe samples were placed in individual sample containers, grouped in numbers of 10 or less and submitted to the laboratory for compositing and analysis. A total of 15 composite samples were analyzed per USEPA Method 8082 and included the following designated sampling grid areas: A-1 thru A-8, B-1, C-1, D-1, E-1, E-2, F-1 and F-2. Based on the analytical results, PCBs were detected in concentrations ranging from 0.72 to 176 $\mu\text{g}/100\text{ cm}^2$. Of the 15 composite samples analyzed, one sample, D-1-3 (1,2,3,4,5,6,7,8,9), was reported to contain PCBs at a concentration greater than 100 $\mu\text{g}/100\text{ cm}^2$. Wipe sampling locations with total PCB results are presented in **Figure 7**. A copy of the analytical report for the 3rd round of tunnel wipe sampling is included as **Attachment A**.

7.6 3rd Tunnel Cleaning Event and Encapsulation with Oil-Resistant Two Part Epoxy (June 27 to July 6, 2012)

A third cleaning of the tunnel was conducted during the plant shut-down period of June 27 to July 3, 2012. The purpose of this cleaning event was two-fold:

1. Remove as much as possible of the remaining residual PCB-containing oils from the floor surface prior to application of a two-part epoxy; and
2. Preparation of the floor for installation of a two-part oil resistant epoxy throughout the tunnel.

It should be noted that the procedures originally presented to the USEPA via e-mail, dated June 2012, were modified in the field due to the need for a more thorough cleaning of the floor surface prior to application of the two-part epoxy. The additional cleaning tasks implemented in the field included the application of a double wash-rinse using a floor degreaser (solvent). Friction Holdings understood that these additional cleaning procedures complied with the procedures and intent identified in 40 CFR Subpart S Double Wash-Rinse procedures. A description and methodology of these procedures is provided as follows:

- Removed all non-essential equipment and/or supplies located in the tunnel by plant personnel;

- Cleaned-up all standing oil, dirt and debris from the floors of the tunnel and placement into open top 55-gallon drums for subsequent off-site disposal (this procedure include hand scraping of heavily soiled areas of dirt and oil build-up);
- Applied floor dry, broomed-in, used to absorb any remaining oil residues;
- Swept and shoveled oil-contaminated floor dry into open top 55-gallon drums for subsequent off-site disposal;
- Applied tri-sodium phosphate (TSP) solution and scrubbed each one-foot square area for at least one minute, rinsed, and then collected into 55-gallon open top drums for subsequent off-site disposal;
- Applied a terpene-based solvent degreaser (Zep®) to the entire tunnel floor surface;
- Wiped floor of Zep® using absorbent pads after residing in-place for several minutes;
- Re-applied Zep® floor degreaser solution, let stand for several minutes, rinse with tap water;
- Allowed floor to air dry overnight;
- Re-applied ZEP® and mechanically scrubbed floor surface with padded buffer, followed by a rinse with tap water, and allowed floor area to dry overnight;
- Sanded surface of concrete floor with mechanical floor sander, swept floor and collected dust and debris into 55-gallon open top drums for subsequent off-site disposal.

Following the surface washing activities, an epoxy encapsulant was placed on the concrete surface according to the requirements of 761.30(p)(1)(A). The intent of the encapsulant was to prevent human contact with PCBs that may remain in the underlying concrete. The floor was inspected prior to sealing, and after the 24-hour drying time, no wet areas or any other foreign debris was observed.

Prior to application of the two-part epoxy, rigorous cleaning of the entire tunnel floor area was conducted. This final cleaning involved an initial cleaning with a TSP solution followed by a double wash/rinse with ZEP®. Additional preparation of the floor surface for application of a two-part epoxy was employed including cleaning with a floor buffer and mechanical sanding of the floor surface. The epoxy was applied as follows:

- Application of first part of two-part epoxy and let dry overnight; and
- Applied 2nd part of two-part epoxy and let dry overnight.

Although the epoxy coatings were applied in two steps, the two coatings are designed to fuse together to make a solid, resistant surface. Specifically, a catalyst was mixed with the epoxy used during the 2nd application and bonded the 1st and 2nd coats. It should be noted although the epoxy used is designed to bond as one material, following application a significantly darker grey pigment was mixed into the 2nd coat prior to application for potential verification of wearing and/or separation of the two epoxy coats over time. A copy of the material description for the epoxy material used is included as **Attachment D**.

In sum, the tunnel floor and specific parts thereof, was scrubbed with TSP four times, cleaned with solvent based cleaners eight times, and sealed with two coats of a two-part epoxy. A summary of the remedial actions conducted within the tunnel since the inception of the Consent Decree is presented in **Table 6**.

7.7 4th Round of Verification Wipe Sampling Event (January 2013)

A fourth round of verification wipe sampling of the floor surfaces of the utility tunnel was completed on January 29 and 30, 2013. This sampling was conducted per USEPA's request of verification sampling six months following implementation of the encapsulation procedures described above. The sampling

was conducted per the specifications provided in the approved TSCA WP and associated FSP and QAPP. The individual wipe samples were placed in individual sample containers, grouped in numbers of 10 or less, and submitted to the laboratory for compositing and analysis. A total of 27 composites were analyzed per USEPA Method 8082. Based on the analytical results, PCBs were detected in 14 of the 27 composites samples ranging from 2.7 to 41 $\mu\text{g}/100\text{ cm}^2$ with an average of 10 $\mu\text{g}/100\text{ cm}^2$. Wipe sampling locations with total PCB results are presented in **Figure 8**. A copy of the analytical report for the 4th round of tunnel wipe sampling is included as **Attachment A**.

Friction Holdings intends to maintain the integrity of the epoxy coating within the floor surface of the tunnel through an on-going operations and management system consisting of inspection and repair. Also as specified under 40 CFR 761.30(p)(2)(B) of the continued-use authorization, each area of concrete floor that had received the double-wash-rinse procedure and epoxy will be marked using the USEPA PCB "ML" label that is described in 40 CFR 761.45. The labels will be applied at the entrance, corners, and central portions of each area so that they are visible to workers.

8.0 CONCLUSIONS

The purpose of this Report, as stipulated in Section IV of the TSCA SOW, was to demonstrate the completion of the required elements presented in the TSCA WP. As stated in the TSCA WP, sampling activities were implemented to characterize the effectiveness of prior remedial activities of the following five subject areas located at the Friction Holdings facility located at 1204 Darlington Avenue in Crawfordsville, Indiana (Site):

- Abandoned portions of the 18-inch RCP filled and sealed;
- Collapsed distribution box and associated pipe;
- Pipe leading from the tunnel to the distribution box;
- Former 18-inch culvert area (Grid Sampling Area); and
- Tunnel area located beneath the Plant.

As presented in this Report, Friction Holdings has documented the completion of the required elements presented in the TSCA SOW and USEPA approved WP. A summary of the completed activities and a description of the control mechanisms implemented as part of the Risk-Based Disposal conducted at the Site are provided below.

8.1 Abandoned portions of the 18-inch RCP Filled and Sealed

Characterization sampling of the abandoned portions of the 18-inch RCP has been completed per the procedures described in the TSCA SOW and approved TSCA WP. Based on the sampling results, soils located adjacent the former 18-inch RCP contain PCBs at concentrations less than the clean-up object of 10 mg/kg.

Portions of the former 18-inch are to remain in place at the Site. For this reason, Friction Holdings has developed restrictions to disturbance of the 18-inch RCP through maintenance of a cap and development of a deed restriction to be filed on the property.

8.2 Collapsed Distribution Box and Associated Piping

Characterization sampling within the vicinity of the distribution box and associated piping has been completed per the procedures described in the TSCA SOW and approved TSCA WP. Based on the characterization sampling results, soils located within the vicinity of the distribution box contain PCBs at concentrations higher than the clean-up object of 10 mg/kg. One composite sample of soils from within the vicinity of the former distribution box contained 61.4 mg/kg.

Portions of the former distribution box and PCB-impacted soils are to remain in place at the Site. As described in the TSCA SOW, Friction Holdings has the option to submit a Risk-Based Disposal Application for on-site disposal of the soils and associated PCB Waste. For this reason, Friction Holdings submitted a Risk-Based Disposal Application to USEPA requesting disposal of the remaining PCB Remediation Waste. As part of the Risk-Based Disposal Application, Friction Holdings presented information regarding the installation of a cap meeting the requirements of 40 CFR 761.61(a)(7) over the former distribution box area. Additionally, Friction Holdings intends to file a deed restriction meeting the requirements of 40 CFR 761.61(a)(8). According to 40 CFR 761.61(a)(4)(B), the cleanup level for bulk PCB remediation wastes in a low occupancy areas is equal to or less than 25 ppm; and from greater than 25 ppm to 100 ppm if the site is covered with a cap meeting the requirements of paragraphs 40 CFR 761.61(a)(7) and (a)(8).

8.3 Pipe leading from the Tunnel to the Distribution Box

Characterization sampling of the pipe leading from the tunnel to the former distribution box has been completed per the procedures described in the TSCA SOW and approved TSCA WP. Based on the sampling results, soils located adjacent the former existing pipe contains PCBs at concentrations less than the clean-up object of 10 mg/kg.

Portions of the pipe remain in place at the Site. For this reason and per the request of USEPA, wipe sampling of the interior of the pipe was conducted. Based on the wipe sampling results, the concentration of PCBs were found to be below those allowed for a non-porous material located in an area of low occupancy. According to 40 CFR 761.61(a)(4)(ii), the cleanup level for non-porous surfaces in a low occupancy area is less than $100\mu\text{g}/100\text{ cm}^2$.

8.4 Former 18-inch culvert area (Grid Sampling Area)

Characterization sampling of the former 18-inch culvert area has been completed per the procedures described in the TSCA SOW and approved TSCA WP. Based on the sampling results, soils located within the former 18-inch culvert area (Grid Sampling Area) contain PCBs at concentrations less than the clean-up object of 10 mg/kg.

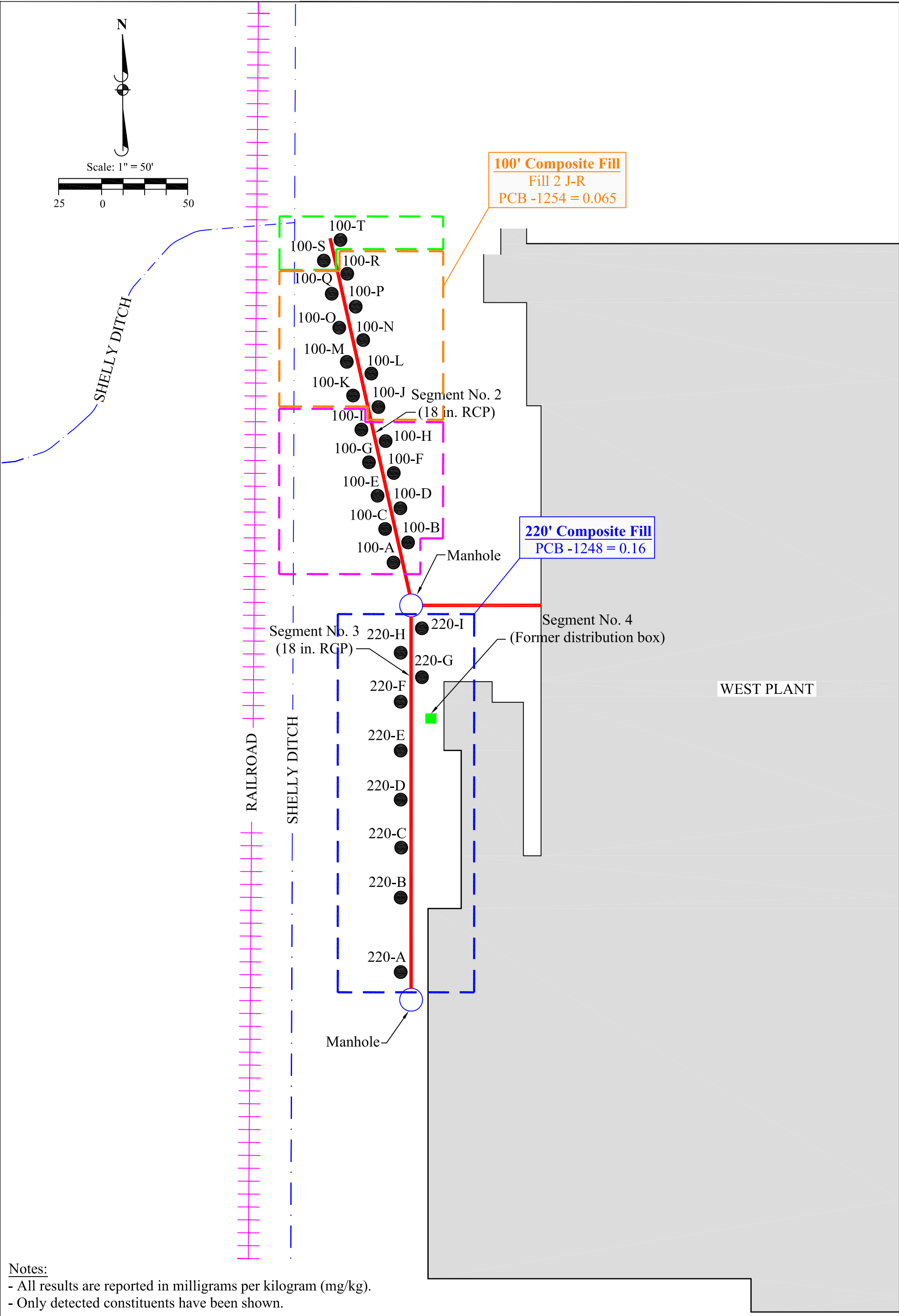
Soils at one grid location were found to contain 3.0 mg/kg of PCBs. Due to the location of these soils along the sloped bank at the edge of property boundary, Friction Holdings installed an approximate one foot thick cement/grout cap to help stabilize the soils and eliminate potential erosion.

8.5 Tunnel area located beneath the Plant

Wipe sampling of the tunnel has been completed per the procedures described in the TSCA SOW and approved TSCA WP. Based on the initial round of wipe sampling results, Friction Holdings discovered that the tunnel required additional cleaning. Decontamination of the utility tunnel floor, per the specifications identified in Subpart S 761.375 as intended for dirty grease- and grime-coated surfaces, including a detergent wash-rinse followed by a solvent wash-rinse was conducted. Based on a second round of wipe sampling, additional cleaning of impacted areas based on the wipe sampling results was conducted. Cleaning of the furnace cylinders and draining and replacement of the hydraulic oil throughout the hydraulic system was also conducted. Subsequent wipe sampling indicated PCBs remaining within the concrete floor. For this reason and per the suggestion of USEPA, the entire floor surface was cleaned again and encapsulated with two coats of a two-part epoxy.


A 4th round of wipe sampling was conducted approximately 6-months following the encapsulation. Based on the analytical results, PCBs were detected in 14 of the 27 composites samples ranging from 2.7 to $41\mu\text{g}/100\text{ cm}^2$ with an average of $10\mu\text{g}/100\text{ cm}^2$.

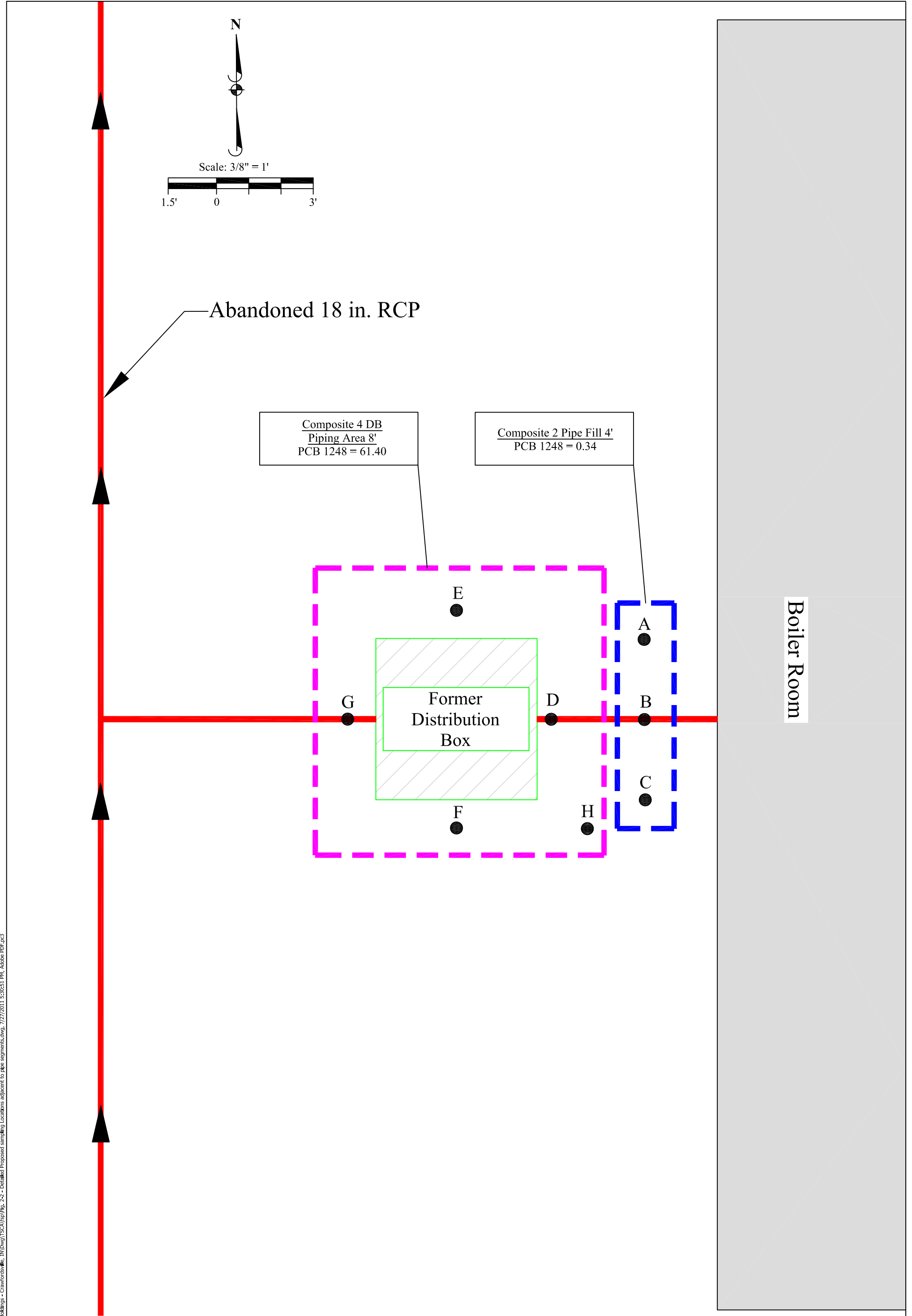
FIGURES




Notes:

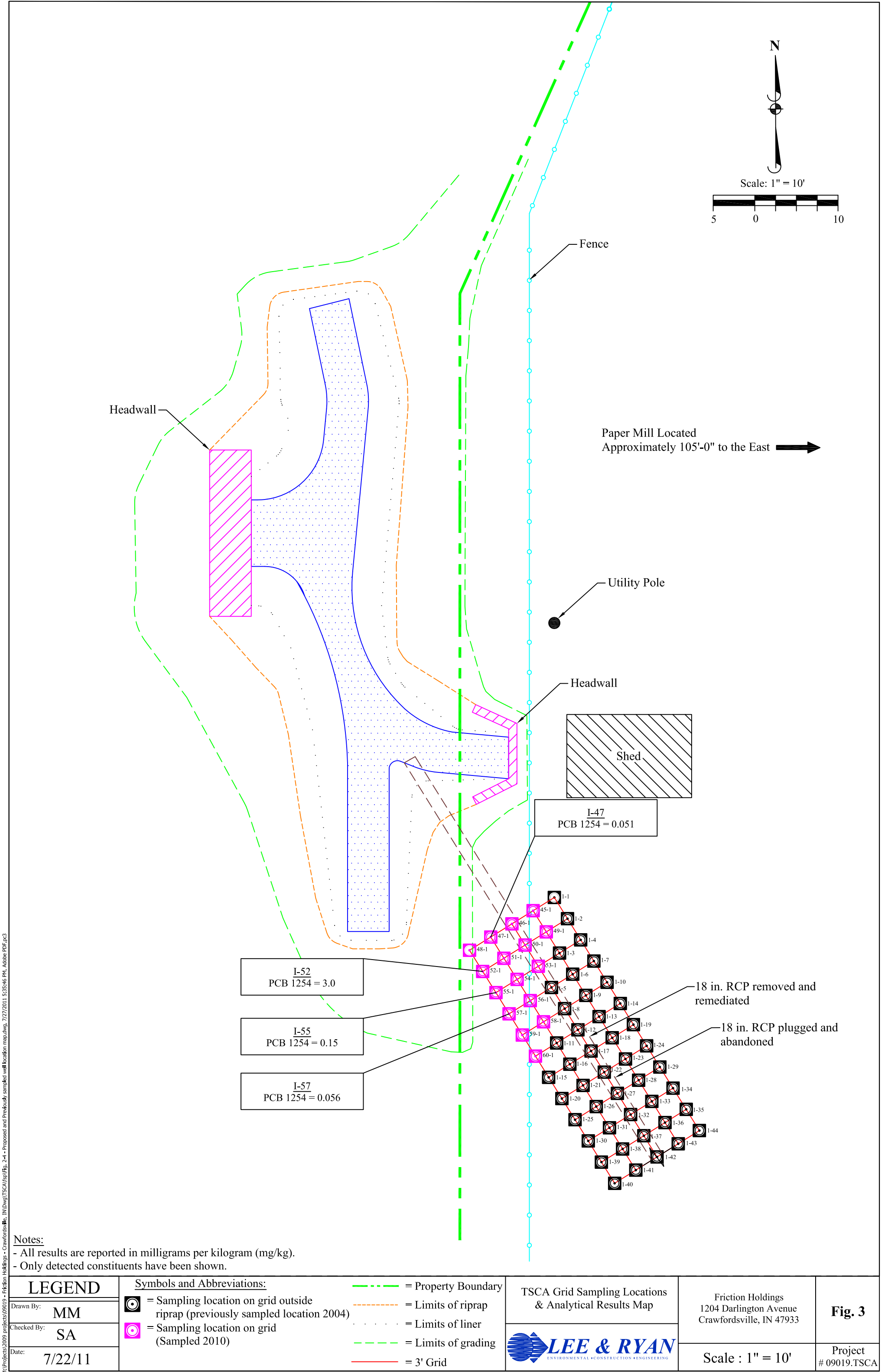
- All results are reported in milligrams per kilogram (mg/kg).
- Only detected constituents have been shown.

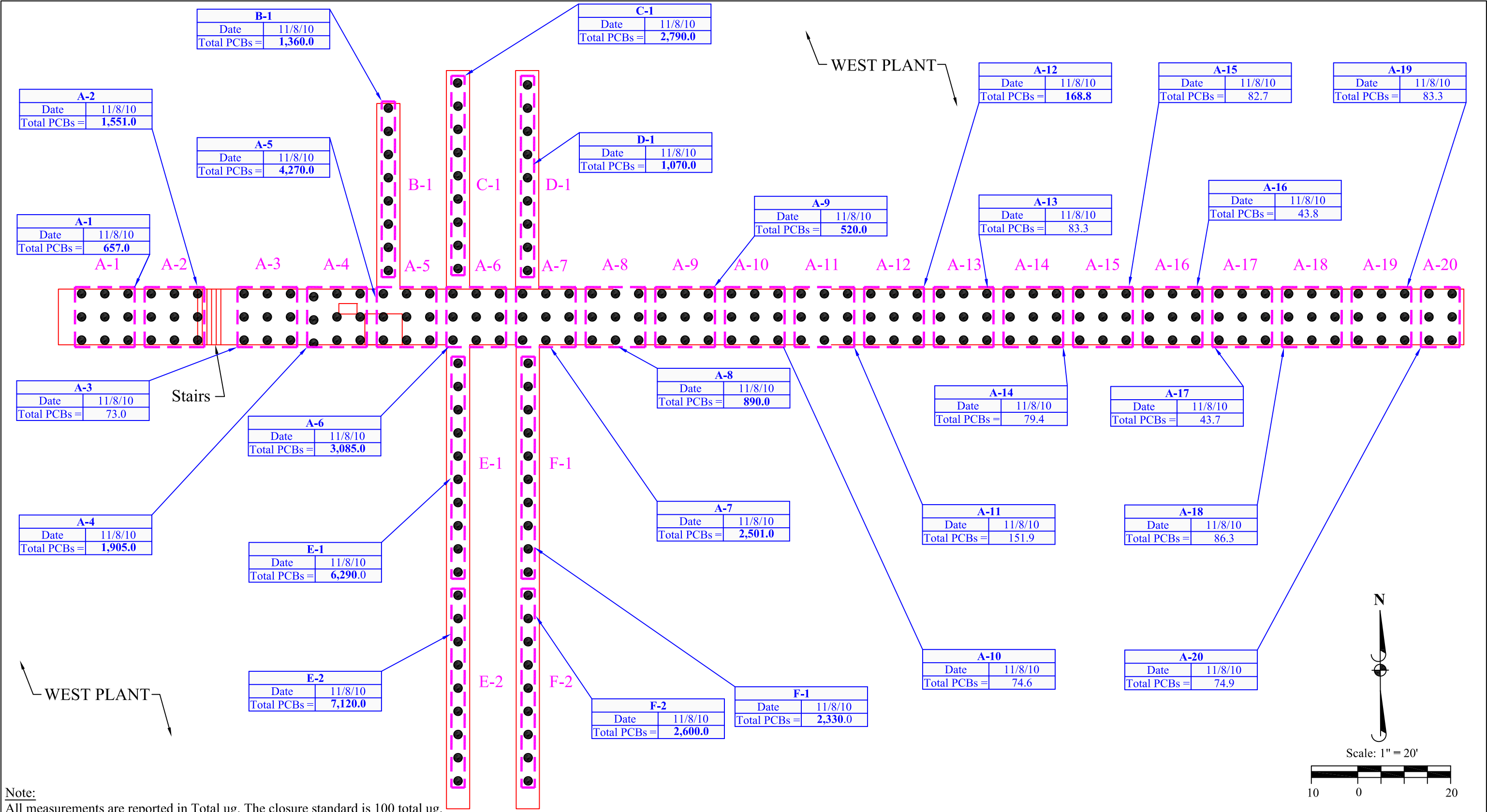
LEGEND		Symbols and Abbreviations:		Soil Boring Location and Analytical Results 100 & 220 Foot Sections of 18" RCP	Friction Holdings 1204 Darlington Avenue Crawfordsville, IN 47933	Fig. 1
Drawn By:	MM	● = Boring Location	■ = 100' Composite Location Box (S-T)			
Checked By:	SA	■ = 100' Composite Location Box (A-I)	■ = 100' Composite Location Box (J-R)	 LEE & RYAN ENVIRONMENTAL • CONSTRUCTION • ENGINEERING	Scale : 1" = 50'	Project # 09019.TSCA
Date:	7/22/11		■ = 220' Composite Location Box (A-I)			






LEGEND		TSCA Detailed Sampling Location Area Adjacent to Former Distribution Box and Associated Piping	Friction Holdings 1204 Darlington Avenue Crawfordsville, IN 47933	Fig. 2
Drawn By: CW	Symbols and Abbreviations: ● = Proposed Boring Location □ = Composite Piping Area □ = Composite Location Box			
Checked By: SA	Notes: - All results are reported in milligrams per kilogram (mg/kg). - Only detected constituents have been shown.		Scale : 3/8" = 1'	Project # 09019.TSCA
Date: 7/22/11				

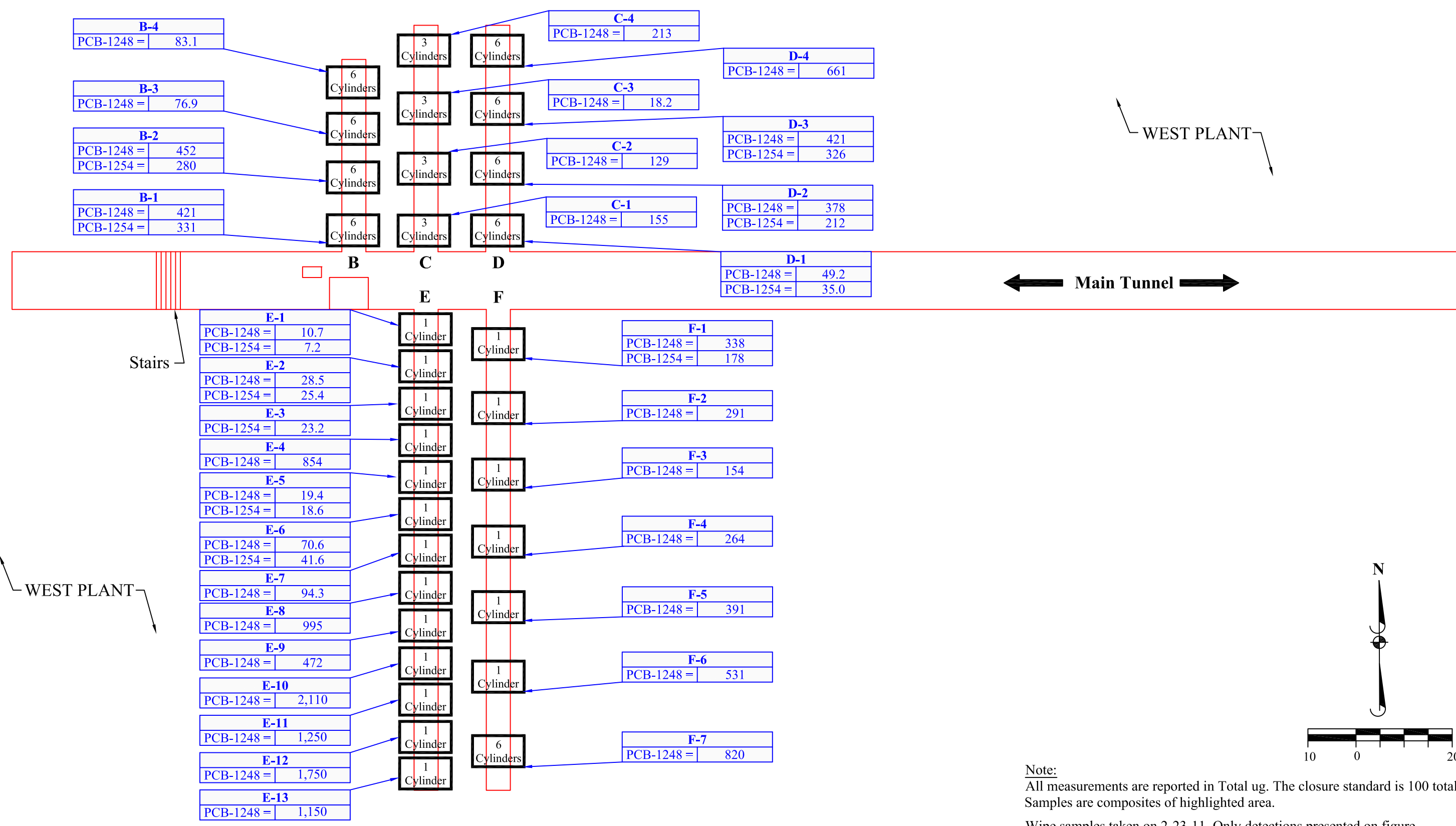
M:\Projects\2009 projects\09019 - Friction Holdings - Crawfordville, IN\Drawings\TSCA\Fig. 2-4 - Proposed and Previously sampled well location map.dwg, 7/27/2011 5:35:46 PM, Adobe PDF.pc3




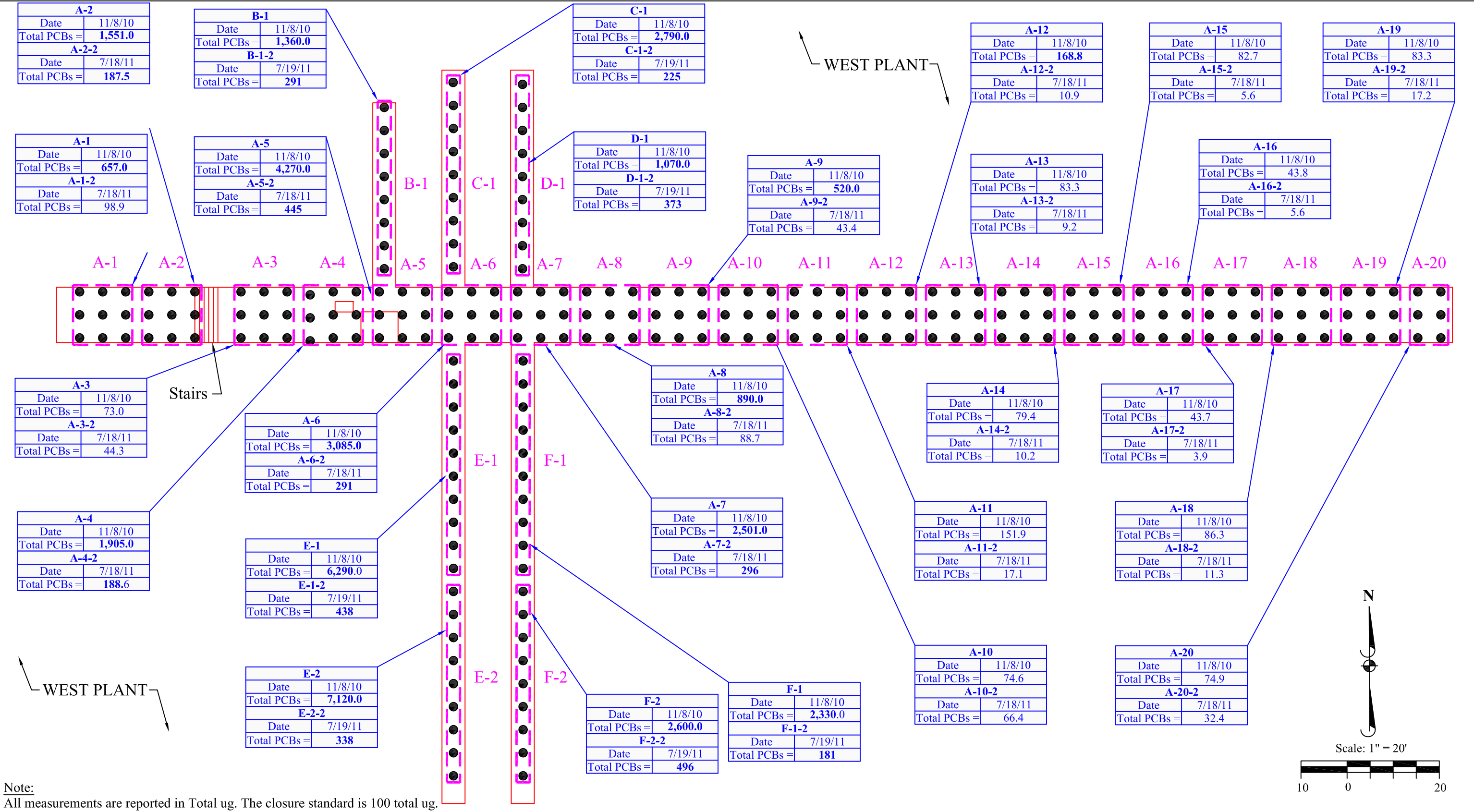



Note:
All measurements are reported in Total ug. The closure standard is 100 total ug.

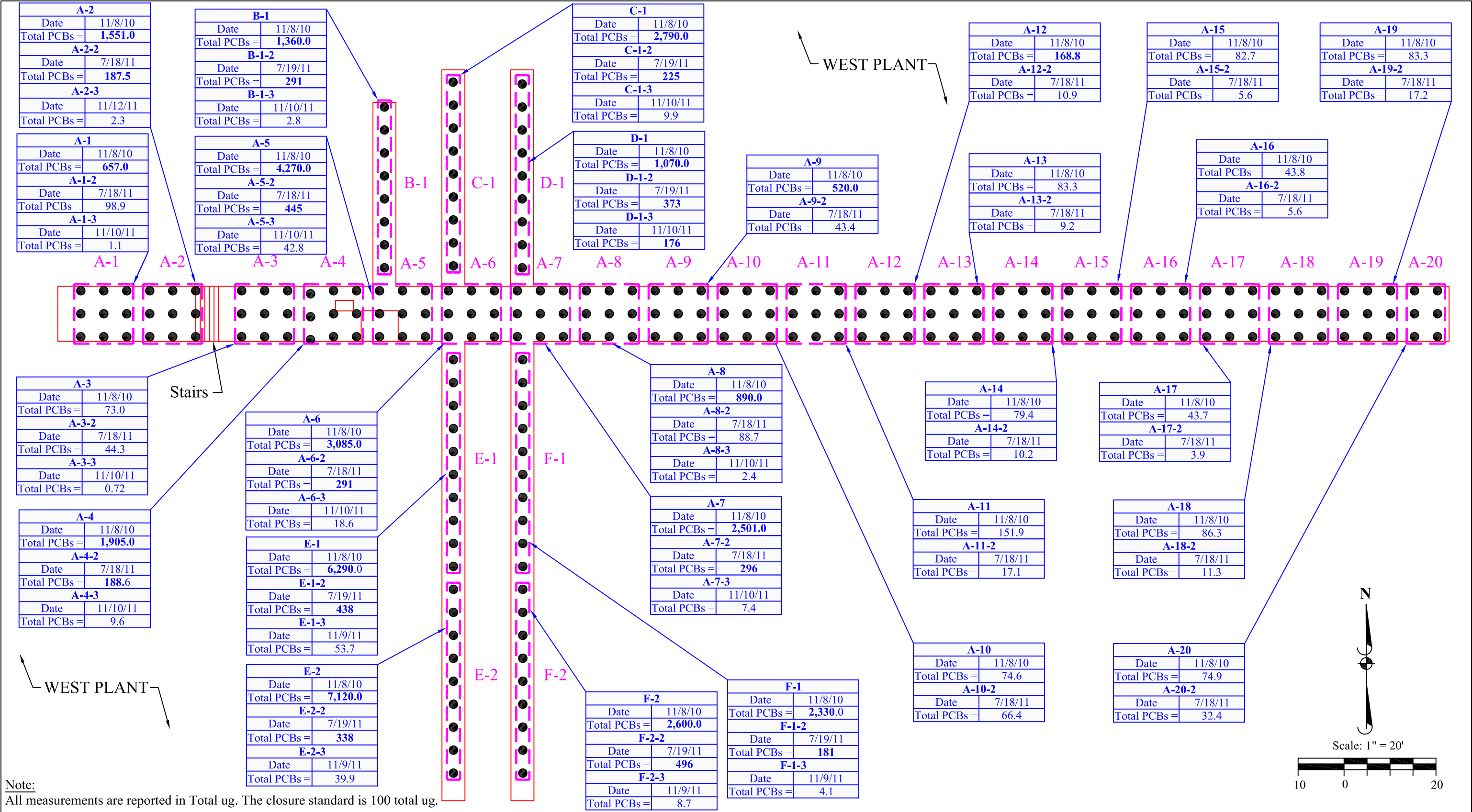
LEGEND		<u>Symbols and Abbreviations:</u>  = Sample location  = Composite areas		TSCA Completion of Work Report Tunnel Wipe Sampling Analytical Results Map 1st Round - November 2010	Friction Holdings 1204 Darlington Avenue Crawfordsville, IN 47933	Figure 4
Drawn By: CW	Scale : 1" = 20'				Project # 09019.TSCA	
Checked By: RSP						
Date: 09/24/13						

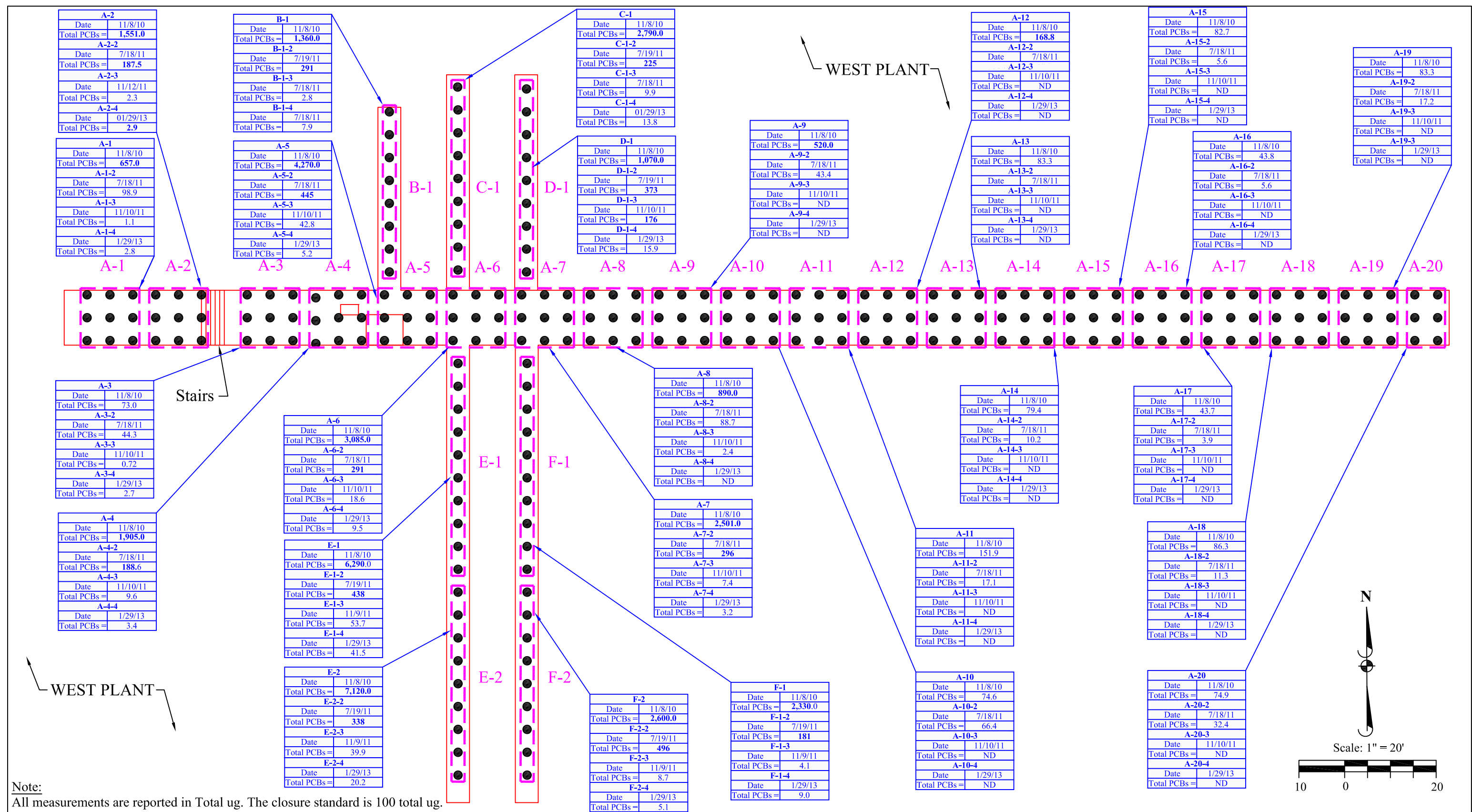


LEGEND		<u>Symbols and Abbreviations:</u>		TSCA Completion of Work Report Cylinder Sampling Results Map	Friction Holdings 1204 Darlington Avenue Crawfordsville, IN 47933	Figure 5
Drawn By:	CW				Scale : 1" = 20'	
Checked By:	RSP					
Date:	09/24/13					
				Project # 09019.TSCA		



LEGEND			TSCA Completion of Work Report Tunnel Wipe Sampling Analytical Results Map 2nd Round - July 2011	Friction Holdings 1204 Darlington Avenue Crawfordsville, IN 47933	
Drawn By:	CW			Scale : 1" = 20'	Project # 09019.TSCA
Checked By:	RSP				
Date:	09/24/13				





TABLES

TABLE 1
100 FOOT SECTION OF 18-INCH REINFORCED CONCRETE PIPE ANALYTICAL RESULTS

Friction Holdings, LLC
1204 Darlington Avenue, Crawfordsville, IN

Sample ID	Collection Date	Matrix	Units	PCB-1242 (Aroclor 1242)	PCB-1254 (Aroclor 1254)	PCB-1016 (Aroclor 1016)	PCB-1232 (Aroclor 1232)	PCB-1248 (Aroclor 1248)	PCB-1221 (Aroclor 1221)	PCB-1260 (Aroclor 1260)
100' Composite Fill 2 J-R	11/10/2010	Solid	mg/kg	<0.042	0.065	<0.042	<0.042	<0.042	<0.042	<0.042
100' Composite Fill 3 S-T	11/10/2010	Solid	mg/kg	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039
100' Composite Fill1 A-I	11/10/2010	Solid	mg/kg	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038
100' Composite Native 1 A-I	11/10/2010	Solid	mg/kg	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041
100' Composite Native 2 J-R	11/10/2010	Solid	mg/kg	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038
100' Composite Native 3 S-T	11/10/2010	Solid	mg/kg	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036
TRIP BLANK	11/10/2010	Water	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

mg/kg = milligrams per Kilogram

mg/L = milligrams per Liter

TABLE 2
220 FOOT SECTION OF 18-INCH REINFORCED CONCRETE PIPE ANALYTICAL RESULTS

Friction Holdings, LLC
1204 Darlington Avenue, Crawfordsville, IN

Sample ID	Collection Date	Matrix	Units	PCB-1242 (Aroclor 1242)	PCB-1254 (Aroclor 1254)	PCB-1016 (Aroclor 1016)	PCB-1232 (Aroclor 1232)	PCB-1248 (Aroclor 1248)	PCB-1221 (Aroclor 1221)	PCB-1260 (Aroclor 1260)
220' Composite Fill	11/10/2010	Solid	mg/kg	<0.048	<0.048	<0.048	<0.048	0.16	<0.048	<0.048
220' Composite Native	11/10/2010	Solid	mg/kg	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037
DUP	11/10/2010	Solid	mg/kg	<0.040	<0.040	<0.040	<0.040	0.084	<0.040	<0.040
FIELD BLANK 1	11/10/2010	Water	mg/L	<0.00055	<0.00055	<0.00055	<0.00055	<0.00055	<0.00055	<0.00055
RINSATE BLANK	11/10/2010	Water	mg/L	<0.00052	<0.00052	<0.00052	<0.00052	<0.00052	<0.00052	<0.00052
TRIP BLANK	11/10/2010	Water	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

mg/kg = milligrams per Kilogram

mg/L = milligrams per Liter

TABLE 3
DISTRIBUTION BOX AND ASSOCIATED PIPE ANALYTICAL RESULTS
Friction Holdings, LLC
1204 Darlington Avenue, Crawfordsville, IN

Sample ID	Collection Date	Matrix	Units	PCB-1242 (Aroclor 1242)	PCB-1254 (Aroclor 1254)	PCB-1016 (Aroclor 1016)	PCB-1232 (Aroclor 1232)	PCB-1248 (Aroclor 1248)	PCB-1221 (Aroclor 1221)	PCB-1260 (Aroclor 1260)
Composite-2-Pipe Fill	11/11/2010	Solid	mg/kg	<0.037	<0.037	<0.037	<0.037	0.34	<0.037	<0.037
Composite-3-Pipe 8 FT	11/11/2010	Solid	mg/kg	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037
Composite-4-DB 8 FT	11/11/2010	Solid	mg/kg	<3.8	<3.8	<3.8	<3.8	61.4	<3.8	<3.8
DB-Composite-1 Fill	11/11/2010	Solid	mg/kg	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038
DUP	11/11/2010	Solid	mg/kg	<0.037	<0.037	<0.037	<0.037	0.33	<0.037	<0.037
TRIP BLANK	11/11/2010	Water	mg/L	<0.00051	<0.00051	<0.00051	<0.00051	<0.00051	<0.00051	<0.00051

mg/kg = milligrams per Kilogram

mg/L = milligrams per Liter

TABLE 4
PIPING WIPE SAMPLE ANALYTICAL RESULTS
Friction Holdings, LLC
1204 Darlington Avenue, Crawfordsville, IN

Sample ID	Collection Date	Matrix	Units	PCB-1242 (Aroclor 1242)	PCB-1254 (Aroclor 1254)	PCB-1016 (Aroclor 1016)	PCB-1232 (Aroclor 1232)	PCB-1248 (Aroclor 1248)	PCB-1221 (Aroclor 1221)	PCB-1260 (Aroclor 1260)
Pipe East	1/30/2013	Wipe	ug	< 2.5	< 2.5	< 2.5	< 2.5	29.7	< 2.5	< 2.5
Pipe West	1/30/2013	Wipe	ug	< 2.5	< 2.5	< 2.5	< 2.5	9.3	< 2.5	< 2.5
EQUIPMENT BLANK	1/30/2013	Wipe	ug	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5

ug = micrograms

TABLE 5
GRID SAMPLING ANALYTICAL RESULTS

Friction Holdings, LLC
1204 Darlington Avenue, Crawfordsville, IN

Sample ID	Collection Date	Matrix	Units	PCB-1242 (Aroclor 1242)	PCB-1254 (Aroclor 1254)	PCB-1016 (Aroclor 1016)	PCB-1232 (Aroclor 1232)	PCB-1248 (Aroclor 1248)	PCB-1221 (Aroclor 1221)	PCB-1260 (Aroclor 1260)
DUP 1	11/11/2010	Solid	mg/kg	<0.037	0.083	<0.037	<0.037	<0.037	<0.037	<0.037
I-45, 5.0	11/11/2010	Solid	mg/kg	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39
I-46, 5.0	11/11/2010	Solid	mg/kg	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038
I-47, 4.0	11/11/2010	Solid	mg/kg	<0.037	0.051	<0.037	<0.037	<0.037	<0.037	<0.037
I-48, 2.0	11/11/2010	Solid	mg/kg	<0.042	<0.042	<0.042	<0.042	<0.042	<0.042	<0.042
I-49, 5.0	11/11/2010	Solid	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
I-50, 5.0	11/11/2010	Solid	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
I-51, 3.0	11/11/2010	Solid	mg/kg	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037
I-52, 2.0	11/11/2010	Solid	mg/kg	<0.38	3.0	<0.38	<0.38	<0.38	<0.38	<0.38
I-53, 5.0	11/11/2010	Solid	mg/kg	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041
I-54, 5.0	11/11/2010	Solid	mg/kg	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038
I-55, 3.0	11/11/2010	Solid	mg/kg	<0.038	0.15	<0.038	<0.038	<0.038	<0.038	<0.038
I-56, 5.0	11/11/2010	Solid	mg/kg	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039
I-57, 4.0	11/11/2010	Solid	mg/kg	<0.037	0.056	<0.037	<0.037	<0.037	<0.037	<0.037
I-58, 5.0	11/11/2010	Solid	mg/kg	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039
I-59, 5.0	11/11/2010	Solid	mg/kg	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039
I-60, 5.0	11/11/2010	Solid	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
FIELD BLANK 1	11/11/2010	Water	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
RINSATE BLANK	11/11/2010	Water	mg/L	<0.00051	<0.00051	<0.00051	<0.00051	<0.00051	<0.00051	<0.00051
TRIP BLANK	11/11/2010	Water	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

mg/kg = milligrams per Kilogram

mg/L = milligrams per Liter

TABLE 6
Summary of Remedial Events Conducted in Tunnel Since Inception of Consent Decree

Date of Activity	Remedial Action	Number of Tunnel Sampling/Cleaning Events
November 8-9, 2010	Initial Verification Sampling of Tunnel: <ul style="list-style-type: none"> • 221 Grab • 27 Composite From Tunnel 	Sample Only
February 23, 2011	Source Area Sampling: <ul style="list-style-type: none"> • 2 Grab Samples of Hydraulic Oil (One Each from the East and West Reservoirs) • 32 Composite Samples of Swipe Samples Collected from the Exteriors of the Furnace Cylinders 	Sample Only
June 28-July 12, 2011	Tunnel Floor Cleaning Sequence (Subpart S 761.375): <ul style="list-style-type: none"> • Apply Floor Dry • Detergent Wash With TSP • Solvent Wash With Capsur® • Solvent Wash With Capsur® Furnace Cylinder Cleaning Sequence: <ul style="list-style-type: none"> • Solvent Wash With Capsur® • Solvent Wash With Capsur® 	Detergent Wash – 1 Solvent Wash - 2
July 18-19, 2011	Verification Sampling of Tunnel: <ul style="list-style-type: none"> • 27 Composite Samples of Tunnel 	Sample Only
November 9-10, 2011	Tunnel Floor Cleaning of Lateral D Only: <ul style="list-style-type: none"> • Detergent Wash • Solvent Wash With Capsur® • Solvent Wash With Capsur® 	Detergent Wash – 1 Solvent Wash - 2
November 10, 2012	Verification Sampling of Tunnel, Lateral D Only: <ul style="list-style-type: none"> • 15 Composite Samples 	Sample Only
June 27-July 6, 2012	Tunnel Floor Cleaning Sequence of Events: <ul style="list-style-type: none"> • Floor Dry • TSP Wash • Solvent Wash With Zep® • Solvent Wash With Zep® • Solvent Wash With Zep® • Mechanical Scrubbing of Floor • TSP Wash • Solvent Wash With Zep® • Buff Floor • Mechanical Sanding of Floor • Apply 2-Part Epoxy 	Detergent Wash – 2 Solvent Wash – 4
		<u>TOTALS</u> Detergent Wash – 4 Solvent Wash – 8

ATTACHMENT A

ATTACHMENT B



LEE & RYAN

“TSCA RISK-BASED DISPOSAL APPROVAL APPLICATION”

*Friction Holdings, LLC
1204 Darlington Avenue
Crawfordsville, IN 47933
Lee & Ryan Project #: 09019*

*Prepared for Raybestos Powertrain, LLC
f/k/a Friction Holdings, LLC*

A Service Disabled-Veteran Owned Small Business

Issued: September 13, 2013

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ACRONYM LIST

BGS	below ground surface
CD	Consent Decree
CFR	Code of Federal Regulations
CSX	CSX Corporation, Inc.
DOJ	Department of Justice
FSP	Field Sampling Plan
Friction Holdings	Friction Holdings, LLC
GPR	ground penetrating radar
IDEM	Indiana Department of Environmental Management
Lee & Ryan	Lee & Ryan Environmental Consulting, Inc.
MSL	mean seal level
µg/L	micrograms per liter
µg/100 cm ²	micrograms per 100 square centimeters
mg/kg	milligrams per kilogram
ppm	parts per million
PCB	polychlorinated biphenyl
QAPP	Quality Assurance Project Plan
RCP	reinforced concrete pipe
RSL	regional screening levels
RCRA	Resource Conservation and Recovery Act
RBDA	Risk-based Disposal Application
TSCA	Toxic Substance Control Act
TSCA WP	TSCA Work Plan
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey

1.0 INTRODUCTION

The following Toxic Substance Control Act (TSCA) Risk-based Disposal Application (RBDA) for the management of polychlorinated biphenyl (PCB)-containing soils and structures located within the Friction Holdings, LLC (Friction Holdings) facility, located at 1204 Darlington Avenue, Crawfordsville, Indiana (Site) has been prepared for review and subsequent approval by the U.S. Environmental Protection Agency (USEPA). This RBDA has been prepared in an effort to comply with the closure requirements presented in 40 CFR 761 Subpart D Storage and Disposal (§761.61 – PCB Remedial Waste) as well as provisions of the Consent Decree (DOJ No. 90-5-2-1-07285) between the U.S. Department of Justice (DOJ) and Friction Holdings, dated July 25, 2009.

As presented in Paragraphs 5a, .b, and c. of Appendix B (Statement of Work for TSCA Injunctive Relief) of the above referenced Consent Decree (CD), and the associated TSCA Work Plan (TSCA WP) developed for characterization of the Site, submission of a Risk-Based Disposal Application is presented as an option for closure of the following three areas of the Site:

- Approximate 100 foot section of the former 18-inch reinforced concrete pipe (RCP) Filled and Sealed;
- Area of the Collapsed Distribution Box and pipe leading to the former 18-inch RCP; and
- Pipe leading from the Tunnel with the sump to the Former Distribution Box.

It is Friction Holding's intent to seek Risk-Based Disposal approval for these three areas identified above.

The basic elements of the RBDA, as identified in 40 CFR 761.61, are presented in the following sections:

- **Section 2.0 Site Background and Description** – Section 2.0 includes a history of reported activities associated with disposal of the PCB impacted materials within the vicinity of the four subject areas identified above as well as detailed description of the location and extent of the PCB impacted materials.
- **Section 3.0 Site Investigation and Characterization** – Section 3.0 is a summary of sampling activities and results from the characterization sampling conducted under the USEPA Approved TSCA WP.
- **Section 4.0 Selection of Applicable Clean-up Levels** – Section 4.0 provides a discussion of the selection of the applicable cleanup levels applied in this RBDA.
- **Section 5.0 Evaluation of Results and Comparison to Applicable Clean-up Levels** – Section 5.0 is an evaluation of the sampling results and a comparison with established cleanup levels.
- **Section 6.0 Proposed Remedial Actions** – Section 6.0 is a description of proposed remedial actions including installation of a concrete cap, restrictions to Site access and recording of a deed restriction for these areas of the Site.

2.0 SITE BACKGROUND AND DESCRIPTION

The Friction Holdings facility is located at 1204 Darlington Avenue, Crawfordsville, Montgomery County, Indiana. The Site is currently occupied by Raybestos Powertrain LLC, a wet friction parts manufacturer. The facility is located on approximately 30 acres and includes one large manufacturing plant and a smaller technical center. Approximately nine acres of the Site are paved for use as parking, roadways or storage. The manufacturing facility encompasses approximately 480,000 square feet under roof and consists of the three historical manufacturing plants (the North, East and West Plants). These plants are contiguous and represent the historical construction of the facility. All manufacturing processes and engineering/administrative offices are located within the confines of the manufacturing facility.

The manufacturing facility is surrounded by a combination of asphalt parking and grassy areas. A six-foot chain-linked fence surrounds the entire manufacturing and parking areas. Gated entrances are located at the east, southeast and southwest corners of the property.

The Site is located in an industrial complex on the northeast side of Crawfordsville and is surrounded by a mixture of industrial, commercial/retail, agricultural and a rail right of way. The Site is bordered by an agricultural property to the north, Tech Drive to the east, State Road 32 (Darlington Avenue) to the south and an active rail spur owned and operated by CSX to the west.

A shopping/retail center is located to the east across Tech Drive. Commercial retail properties including a car dealership, equipment rental center and restaurant properties are located across Darlington Avenue to the south. A combination of commercial and residential properties are located to the west of the rail spur.

The Site is characterized by mostly flat terrain with a slight slope from east to west. According to the Crawfordsville, Indiana U.S. Geological Survey (USGS) 7.5-minute quadrangle, the Site is located at latitude 40°02'30" and longitude 86°52'00" at an elevation of approximately 750 feet above mean sea level (MSL). **Figure 1** illustrates the Site location on a USGS topographic map.

The following portions of the Site are included in this Risk-Based Disposal Application:

- Approximate 100 foot section of the former 18-inch RCP Filled and Sealed;
- Area of the Collapsed Distribution Box and pipe leading to the former 18-inch RCP; and
- Pipe leading from the Tunnel with the sump to the Former Distribution Box.

The location of each of these subject areas within the Site is presented on **Figure 2**.

A description and history of the use and previous remedial activities associated with each of the areas (prior to implementation of the 2009 USEPA approved TSCA WP) is provided in the following sections. The information provided regarding the history and previous remedial activities is based on the review of available documents and information previously submitted within the USEPA approved TSCA WP. Specific documentation regarding these efforts were previously submitted to EPA as part of the 2000 TSCA/Resource Conservation and Recovery Act (RCRA) Subpoena Response, including: analytical results; figures identifying sampling locations; summary reports; invoices for work completed; and disposal records documenting the decontamination of the utility tunnel, machinery and former 18-inch RCP. A summary of some of these activities was also provided to USEPA in the Current Conditions Report prepared by Exponent® in 2004 (Current Conditions Report). For brevity purposes, these documents are not included in this RBDA.

2.1 100 Foot Section of the former 18-inch RCP Filled and Sealed

Appendix B of the Consent Decree refers to an approximately 100 foot section of the 18-inch RCP that has been abandoned and left in place. This section of the 18-inch RCP is referred to as Segment 2 in the 2004 Current Conditions Report and in fact is approximately 140 feet in length. An additional section of the abandoned 18-inch RCP measuring approximately 220 feet in length is located along the southwest side of the West Plant. This section of the 18-inch RCP was referred to as Segment 3 in the 2004 Current Conditions Report. **Figure 3** provides a layout of the remaining portions of the former 18-inch RCP that are to be included in this RBDA.

The remedial actions conducted in regards to the 18-inch RCP storm sewer system has reportedly been conducted in phases beginning in 1996 and continued in 1999, 2001 and 2002. A summary of each of these activities is provided in the following sections.

Decontamination of the Former 18-inch RCP, 1996

The entire length of the 18-inch RCP including the distribution boxes were pressure washed by a remediation contractor in 1996. The decontamination fluids were containerized and shipped off-site for proper treatment and/or disposal. Confirmation wipe samples were not collected following decontamination efforts. However, storm water discharge from the former 18-inch RCP outfall was sampled following decontamination and analyzed for PCBs. The result of this sampling was non-detect for PCBs at a detection limit of 2.5 micrograms per liter (µg/L).

Abandonment and Replacement of the Former 18-inch RCP, 1999

In response to a Notice of Violation issued by Indiana Department of Environmental Management (IDEMs) in November 1998, Raybestos retained a remediation contractor to perform abandonment procedures and replace the former 18-inch RCP with a new system. The abandonment and replacement activities were conducted in February and March 1999 and included the following procedures:

- Installation of a new 18-inch RCP approximately 20 feet west and parallel to the former 18-inch RCP;
- Connection of the new 18-inch RCP to two existing manholes located outside the west side of the West Plant;
- Plugging of the former 18-inch RCP inside each of the existing manholes with concrete;
- Plugging the outfall of the former distribution box; and
- Disconnection and abandonment-in-place of the former distribution box previously connected to the former 18-inch RCP.

Confirmation samples were not collected during the abandonment and replacement activities. However, test pit sampling conducted in 1996 along the former 18-inch RCP did not indicate the presence of PCBs. The test pit samples were reportedly collected from sandy soils at depths of 7 and 8.5 feet.

Abandonment and Removal of Section of Former 18-inch RCP, 2001

As part of the Shelly Ditch Removal Action, an approximate 20 foot section of the former 18-inch RCP, referred to as Segment 1 in the Current Conditions Report, was removed in 2001. This removal included the portion of the RCP extending from the former outfall back to just underneath the security fence located along the western edge of the property. The removal was conducted as part of the Shelly Ditch Removal Action under supervision of the USEPA. Prior to implementation of the site work, A

Removal Work Plan Amendment #2 dated July 27, 2001 was submitted to the USEPA for review and approval.

Removal and abandonment activities were conducted between September 10 and 13, 2001 and in general included the following procedures:

- Removal of approximately 20 feet of the former 18-inch RCP and adjacent soil, measuring from the former outfall up-gradient;
- Collection of waste characterization samples and confirmation soil samples; and
- Grouting in-place an approximately 100 foot section of RCP located directly up-gradient of the removed section.

A total of six confirmation samples were collected during the removal and abandonment activities. Five of the samples were collected from the native soils following removal and/or abandonment, and one was collected from the backfill materials placed back in the excavation at Test Pit #1. Analytical results of confirmation samples were less than the detection limit for total PCBs with the exception of one sample collected from the west sidewall of the north end of the former 18-inch RCP excavation. The result for this sample was 4.4 milligrams per kilogram (mg/kg) total detected PCBs.

Results of the waste characterization, confirmation soil sampling and waste disposal records associated with these activities were included in the Final Closure Report Shelly Ditch Removal Action dated August 7, 2003 (GEI 2003), which was previously submitted to the USEPA. Additional documentation of these remedial activities, including a copy of a previously unpublished draft report (SECOR 2001b), was previously provided to the USEPA in the Current Conditions Report (Exponent 2004).

Additional Remedial Measures at 18-inch RCP Outfall, 2002

Additional remedial action was taken at the location of the former 18-inch RCP outfall during the Shelly Ditch Removal Action implemented in 2002. This remedial action was undertaken as part of the CSX Railroad Area remediation which included the following:

- Removal of additional soils in the vicinity of the former outfall;
- Structural stabilization with concrete;
- Placement of a 40-mil PVC liner over the concrete to isolate the remaining contaminants of concern; and
- Final bank stabilization with rip-rap.

Details of these activities were presented in the Final Closure Report Shelly Ditch Removal Action, dated August 7, 2003 (GEI 2003).

Segment 2 of the RCP was filled with concrete in 2001 and portions of Segment 3 were reportedly filled with concrete in 1999. A detailed summary of remedial activities conducted in association with the 18-inch RCP including decontamination, abandonment and sampling efforts is provided in Section 3.0.

2.2 Area of Collapsed Distribution Box

As described in the USEPA approved TSCA WP, the distribution box and associated piping was cleaned during the overall utility tunnel and former 18-inch RCP cleaning and abandonment activities conducted in 1996. Following the cleaning operations, the former distribution box was reportedly disconnected from the tunnel and former 18-inch RCP system and crushed in place. The pipe leading from the tunnel to the former distribution box was subsequently connected to a newly installed sump located to the west

of the boiler room and remains in service. The entire area of the former distribution box is currently covered at the surface by concrete, reportedly installed when the new sump was installed in 1999.

In October 2009, Friction Holdings retained a contractor specializing in ground penetrating radar (GPR) services to locate any remnants of the former distribution box. The results of the GPR survey confirmed Friction Holdings' previously determined location of the former distribution box and associated piping. Additionally, the GPR survey did not indicate the remnants of the former pipe leading from the distribution box to the 18-inch RCP. The approximate location of the former distribution box area and associated piping within the Site is presented on **Figure 2**.

2.3 Pipe Leading from the Tunnel to the Distribution Box

As described in the USEPA approved TSCA WP, the distribution box and associated piping was cleaned during the overall utility tunnel and former 18-inch RCP cleaning and abandonment activities conducted in 1996. Following the cleaning operations, the former distribution box was reportedly disconnected from the tunnel and the former 18-inch RCP system and crushed in place. The pipe leading from the tunnel to the former distribution box was subsequently connected to a newly installed sump located to the west of the boiler room and continues to be in service. This pipe is located completely underground; and runs from a sump located in the utility tunnel to the north under the floor of the manufacturing plant where it turns to the west and runs under the asphalt pavement and boiler room floor to the newer sump. The approximate location of the piping is presented on **Figure 2**.

3.0 SITE INVESTIGATION AND SITE CHARACTERIZATION

Site characterization activities including the former distribution box and associated piping, the former 18-inch RCP, and the former 18-inch culvert area were conducted per the USEPA approved TSCA WP in November 2010. A summary of the characterization activities and presentation of the results for each of these areas is provided in the following sections. Due to the former connection and close proximity to the former distribution box, results from the former 18-inch RCP characterization and the former 18-inch culvert area have been provided for further evaluation of the Site.

3.1 Former Distribution Box and Associated Piping (November 11, 2010)

On November 11, 2010, a total of eight soil borings were installed within the vicinity of the former distribution box and along the associated former piping trace. Specifically, three borings (Borings DB-Comp-1-A thru DB-Comp-1C) were advanced within the vicinity of the pipe area extending from the tunnel, and five borings were advanced along the perimeter of the defined area of the collapsed distribution box. The borings were drilled via direct-push methodology using a Geoprobe®. Each boring was continuously sampled and logged to a minimum depth of eight feet below ground surface (BGS). One boring (Boring DB, Comp 1-B) was completed to a total depth of 12 feet BGS. This boring was advanced to a total of 12 feet BGS in an effort to further characterize the soils and lithology from 8 to 12 feet BGS. A total of four composite samples (two from fill and two from native soils associated with each structure) were collected for off-site analysis for total PCBs using USEPA Method 8082. All sampling was conducted per the specifications presented in the approved TSCA Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP).

Based on the analytical results of the characterization sampling, PCB Aroclor 1248 (Aroclor 1248) was detected at a concentration of 0.34 mg/kg within the composite of the fill material from the piping and 0.33 mg/kg from the duplicate of this material. This material was collected from a depth of four feet BGS. Aroclor 1248 was also detected at a concentration of 61.4 mg/kg from the composite sample of the soils located along the perimeter of the former distribution box. This material was collected from a depth of eight feet. PCBs were not detected (above the method detection limit) in the composite sample of fill from adjacent the distribution box and/or within the native soil composite samples from adjacent the pipe (Borings DB-Comp-1-A thru DB-Comp-1C).

A summary of the samples including the results are presented in **Table 1**. Boring locations from which the composite samples were collected are presented in **Figure 3**. Boring logs for the borings installed within the vicinity of the former distribution box and associated piping are included as **Attachment A**.

3.2 Former 18-inch RCP Filled and Sealed

As described in the approved TSCA Work Plan, two sections of the 18-inch RCP were abandon-in-place in 1999. In Appendix B of the Consent Decree, only the 100-foot section filled and sealed in 2001 was identified as one of the subject areas to be characterized; however, Friction Holdings included an additional 220-foot section (referred to as Segment 3 in the Current Conditions Report, [Exponent 2004]) of the 18-inch RCP as part of the characterization activities. A description of the investigation and characterization activities for these two sections of the 18-inch RCP is provided below.

Approximate 100-foot Section of the 18-inch RCP (Segment 2)

On November 10, 2010, a total of 20 soil borings (Borings 100-A thru 100-T) were installed along this section of the former 18-inch RCP. The borings were installed by direct-push methodology using a

Geoprobe®. Each boring was continuously sampled and logged to a minimum depth of eight feet BGS. A total of six composite samples (three each of pipe bedding and native soils) were collected for off-site analysis of total PCBs using USEPA Method 8082. All sampling was conducted per the specifications presented in the approved TSCA FSP and QAPP. Based on the analytical results, PCB Aroclor 1254 was detected at a concentration of 0.065 mg/kg within the composite of the pipe bedding collected from borings J-R. PCBs were not detected above the method detection limit in any of the other samples. A summary of the samples including the results are presented in **Table 2**. Boring locations from which the composite samples were collected are presented on **Figure 4**.

220-foot Section of the Former 18-inch RCP (Segment 3)

On November 10, 2010, a total of nine soil borings (Borings 200-A thru I) were installed along this section of the former 18-inch RCP. The borings were installed by direct-push methodology using a Geoprobe®. Each boring was continuously sampled and logged to a minimum depth of six feet. A total of two composite samples (one each of pipe bedding and native soils) were collected for off-site analysis for total PCBs using USEPA Method 8082. All sampling was conducted per the specifications presented in the approved TSCA FSP and QAPP. Based on the analytical results, Aroclor 1248 was detected at a concentration of 0.16 mg/kg within the composite of the fill material from this section of the former 18-inch RCP. Aroclor 1248 was also detected at a concentration of 0.084 mg/kg in the duplicate of this composite. PCBs were not detected in the native soil composite sample.

A summary of the samples including the results are presented in **Table 3**. Boring locations from which the composite samples were collected are presented on **Figure 4**.

Verification of Filling and Sealing of the Former 18-inch RCP

Filling and sealing of portions of the former 18-inch RCP, referred to as Segment 3 in the Current Conditions Report (Exponent 2004), was conducted as part of the characterization activities. Upon inspection of a representative portion of this section of the former 18-inch RCP, it was determined that the majority of the former pipe was not filled. Only small segments of the RCP near the existing manways were filled with concrete. However, no liquids or sludges were observed in the pipe. On November 11, 2010 a flowable grout-cement mixture was pumped in the remaining open sections of the pipe.

3.3 Confirmation Sampling of the Pipe(s) from the Tunnel to the Distribution Box

Upon further investigation of the piping from the tunnel to the distribution box, it was determined that the majority of this piping is located beneath the West Plant floor and the existing boiler room and was not accessible for exterior sampling except for the portions located in the vicinity of the former distribution box. The remaining section of the piping located outside the west side of the boiler room was characterized as part of the former distribution box and associated piping investigation activities. Based on the analytical results of the characterization sampling, Aroclor 1248 was detected at a concentration of 0.34 mg/kg within the composite of the fill material from the piping and 0.33 mg/kg from the duplicate of this material. This material was collected from a depth of four feet BGS. Further details regarding these investigation activities are presented in the distribution box and associated piping section of this RBDA.

Additionally, this pipe remains active and is currently connected to a sump located outside the west side of the boiler room. Based on further discussions with USEPA regarding the continued use of this pipe, sampling of the interior surfaces of this pipe was conducted in January 2013. A total of two wipe

samples were collected from the interior of the pipe. One wipe sample (Pipe East) was collected from the interior of the pipe at a point where the pipe goes under the West Plant Floor from the utility tunnel; and an additional wipe sample was collected from the interior of the pipe at a point where the pipe enters the sump located outside the boiler room. All sampling was conducted per the specifications presented in the approved TSCA FSP and QAPP. Based on the analytical results, Aroclor 1248 was detected at a concentration of 29.7 micrograms per 100 square centimeters ($\mu\text{g}/100\text{ cm}^2$) for the interior east pipe location and $9.3\text{ }\mu\text{g}/100\text{ cm}^2$ at the interior west pipe location.

4.0 SELECTION OF APPLICABLE CLEANUP LEVELS

Applicable and/or relevant clean-up levels for PCB-impacted soils and structures remaining at the Site include the following:

- Clean-up Levels Established in 40 CFR 761.61 for self-implemented clean-up; and
- Screening Levels for chemicals in soils, as presented in Appendix A of the Indiana Department of Environmental Management's *Remediation Closure Guide (RCG)*, 2012.

A discussion of each of the selection of applicable clean-up levels and exposure scenarios for the subject areas is presented in the following sections.

4.1 Applicable Clean-up Levels Established in 40 CFR 761.61

According to 40 CFR 761.61(a)(4), for purposes of cleaning, decontaminating, or removing PCB remediation waste under section 761.61, there are four general waste categories: bulk PCB remediation waste, non-porous surfaces, porous surfaces, and liquids. Furthermore, cleanup levels are based on the kind of material and the potential exposure to PCBs left after cleanup is completed. Under 40 CFR 761.61, the PCB-impacted materials to remain at the Site is best described as:

- **Bulk PCB Remediation Waste** – impacted soils and debris in the vicinity of the distribution box and associated pipe bedding, the filled-in 18-inch RCP and associated impacted pipe bedding; and
- **Non-Porous Material** – metal piping remaining from the tunnel to the former distribution box.

Specific cleanup levels have been established within 761.61 for each of these PCB-impacted materials based on the potential exposure to the materials remaining after cleanup. The two exposure scenarios defined within 40 CFR 761.61 are presented below:

- **High Occupancy** – “High occupancy area means any area where PCB remediation waste has been disposed of on-site and where occupancy for any individual not wearing dermal and respiratory protection for a calendar year is: 840 hours or more (an average of 16.8 hours or more per week) for non-porous surfaces and 335 hours or more (an average of 6.7 hours or more per week) for bulk PCB remediation waste. Examples could include a residence, school, day care center, sleeping quarters, a single or multiple occupancy 40 hours per week work station, a school class room, a cafeteria in an industrial facility, a control room, and a work station at an assembly line.”
- **Low Occupancy** – “Low occupancy area means any area where PCB remediation waste has been disposed of on-site and where occupancy for any individual not wearing dermal and respiratory protection for a calendar year is: less than 840 hours (an average of 16.8 hours per week) for non-porous surfaces and less than 335 hours (an average of 6.7 hours per week) for bulk PCB remediation waste.”

The exposure scenario for each of the subject areas located at the Site is best defined as areas of low occupancy. This determination is based on the following site-specific conditions:

- The Bulk PCB Remediation Waste including the impacted soils and debris within the vicinity of the former distribution box and associated pipe bedding are located approximately four to six feet below grade and are covered with a minimum six inches of concrete. Additionally, this area is located exterior of the facility's day to day operations and would only be accessible during excavation activities.

- The Bulk PCB Remediation Waste, including the filled-in 18-inch RCP and adjacent impacted pipe bedding, are located approximately four to six feet below the western asphalt paved drive of the facility. The entire length of the interior of the 18-inch pipe has been filled with concrete; and the exterior of the pipe and adjacent soils would only be accessible during excavation activities.
- The active metal pipe installed below grade from the tunnel sump to the exterior sump west of the boiler room is located mostly under the West Plant and Boiler Room foundations at a depth of two to six feet below grade. The majority of this pipe, which is considered non-porous, would only be accessible during excavation activities. A small portion of the exterior of the pipe (approximately 12 feet) located in the utility tunnel is accessible. However, the interior of the pipe is only accessible by removal or cutting, and neither scenario would likely exceed the low occupancy exposure of 16.8 hours per week.

According to 40 CFR 761.61(a) (4) (B), the clean-up level for Bulk Remediation Waste in a low occupancy scenario are defined as:

- Less than or equal to 25 parts per million (ppm); and
- Greater than 25 ppm to 100 ppm if the site is covered with a cap meeting the requirements of paragraphs 40 CFR 761.61(a)(7) and (a)(8).

According to 40 CFR 761.61(a)(4)(ii), the cleanup level for non-porous surfaces in a low occupancy area is less than $100\mu\text{g}/100\text{ cm}^2$.

4.2 Applicable Screening Levels for PCBs in Soils, IDEM RCG, 2012

A review of the RCG indicates that the screening levels, as presented in Appendix A of the RCG, are appropriate for use as Screening Levels for PCB-soils impacted at the Friction Holdings Site. This determination was based on the following evaluation factors:

- IDEM relies on the values found in the Regional Screening Level (RSL) tables (USEPA, 2011b and updates) and guidance from the Regional Screening Level User's Guide (USEPA 2011) for development of these Screening Levels;
- These Screening Levels provide for additional exposure scenarios;
- Screening Levels have been established for the Chemicals of Concern and the matrixes impacted at the Site; and
- The Friction Holdings Site resides in Indiana.

Screening Levels for Aroclor 1248 (prevalent Aroclor at the Site) in soils, as presented in Appendix A of IDEM's RCG, have been developed for following scenarios are:

- Soil Exposure – Direct Contact – Residential = 3.1 mg/kg
- Soil Exposure – Direct Contact – Commercial/Industrial = 7.4 mg/kg
- Soil Exposure – Direct Contact – Excavation Worker = 460 mg/kg

5.0 EVALUATION OF RESULTS AND COMPARISON TO APPLICABLE CLEANUP LEVELS

A comparison of characterization sampling results, as conducted per the TSCA WP, to the applicable clean-up levels for each of the subject areas included in this RBDA is provided in the following sections. Based on the industrial activities conducted within the confines of the Site, IDEM Screening Levels for Soil Exposure–Direct Contact–Residential Scenario will not be discussed in the following sections.

5.1 Former Distribution Box and Associated Piping

Evaluation of 40 CFR 761.61 Cleanup Levels

The PCB-impacted soils remaining in the vicinity of the former distribution box and associated piping are best described as bulk PCB remediation waste. Additionally, due to the depth of the impacted soils (eight feet BGS), the location of the soils would meet the definition of a low-occupancy area as described in 40 CFR 761.3. According to 40 CFR 761.61(a)(4)(B), the cleanup level for bulk PCB remediation wastes in a low occupancy area is equal to or less than 25 ppm; and from greater than 25 ppm to 100 ppm if the site is covered with a cap meeting the requirements of paragraphs 40 CFR 761.61(a)(7) and (a)(8).

Since the subject area is located in a low occupancy area and covered by a concrete cap, the applicable clean-up level for this material, according to 40 CFR 761.61, is greater than 25 ppm to 100 ppm. The soils in the vicinity of the distribution box and associated piping were found to contain PCB concentrations from 0.34 mg/kg to 61.4 mg/kg.

Evaluation IDEM RCG Screening Levels:

Based on the characterization soil sampling results, screening levels for the Soil Exposure–Direct Contact–Commercial/Industrial Screening Scenario was exceeded within the area of the former distribution box. However, since the area is covered with a cap, the only way a worker could be directly exposed to the impacted soils would be through excavation of the area. In this case, Screening Levels for the Soil Exposure–Direct Contact–Excavation Worker Screening Scenario were not exceeded.

5.2 100 Foot Section of the former 18-inch RCP Filled and Sealed

Evaluation of 40 CFR 761.61 Cleanup Levels

According to 40 CFR 761.61(a)(4), the PCB-impacted soils remaining in the vicinity of the former 18-inch RCP and the abandoned in place piping are best described as bulk PCB remediation waste. Additionally, due to the depth of the impacted soils and the abandoned pipe (four to six feet BGS), the location of the soils and abandoned piping would meet the definition of a low-occupancy area as described in 40 CFR 761.3. According to 40 CFR 761.61(a)(4)(B), the cleanup level for bulk PCB remediation wastes in a low occupancy areas is equal to or less than 25 parts per million (ppm); and from greater than 25 ppm to 100 ppm if the site is covered with a cap meeting the requirements of paragraphs 40 CFR 761.61(a)(7) and (a)(8).

Since the subject area is located in a low occupancy area and covered by an asphalt cap, the applicable clean-up level for this material according to 40 CFR 761.61 is greater than 25 ppm to 100 ppm. Based on the overall characterization sampling conducted in November 2010, it appears that low concentration PCB-impacted soils (less than 1 mg/kg) are located within the pipe bedding along an approximate 45

foot portion of the 100 foot section of the former 18-inch RCP. These soils are at a depth of four to six BGS and include a total volume of approximately 270 cubic feet (3 feet x 45 feet x 2 feet).

Evaluation IDEM RCG Screening Levels

Based on the characterization soil sampling results from adjacent the 18-inch RCP, Screening Levels for the Soil Exposure–Direct Contact–Commercial/Industrial Screening Scenario and Soil Exposure–Direct Contact–Excavation Worker Screening Scenario were **not** exceeded.

5.3 Pipe Leading from the Tunnel to the Distribution Box

Characterization sample results associated with the pipe leading from the tunnel to the distribution box are divided into two categories: characterization soil sampling and the interior wipe sampling. Characterization soil sampling was conducted at accessible areas west of the boiler room where the existing pipe connects to the sump. Due to the inaccessibility of the majority of the pipe leading from the tunnel to the exterior sump, additional characterization sampling including wipe sampling of the interior of the existing pipe was also conducted. This included the collection of wipe samples from the interior of the pipe at accessible portions of the pipe at both ends (east and west points). An evaluation of each of these sample results and comparison to applicable clean-up levels are presented below.

5.3.1 PCB-impacted Soils Located Adjacent to Pipe

Evaluation of 40 CFR 761.61 Cleanup Levels

According to 40 CFR 761.61(a)(4), the PCB-impacted soils remaining in the vicinity of the in-use pipe (portion located west of the boiler) are best described as bulk PCB remediation waste. Additionally, due to the depth of the impacted soils (four to six feet BGS), the location of the soils would meet the definition of a low-occupancy area as described in 40 CFR 761.3. According to 40 CFR 761.61(a)(4)(B), the cleanup level for bulk PCB remediation wastes in a low occupancy areas is less than 25 parts per million (ppm); and greater than 25 ppm to 100 ppm if the site is covered with a cap meeting the requirements of paragraphs 40 CFR 761.61(a)(7) and (a)(8).

Based on the analytical results of the characterization sampling conducted of soils located adjacent the west end of this pipe, Aroclor 1248 was detected at a concentration of 0.34 mg/kg within the composite of the fill material from the piping and 0.33 mg/kg from the duplicate of this material. Since the subject area is located in a low occupancy area and covered by a concrete cap, the applicable clean-up level for this material according to 40 CFR 761.61 is greater than 25 ppm to 100 ppm.

Evaluation IDEM RCG Screening Levels

Based on the characterization soil sampling results from adjacent the pipe near the distribution box, Screening Levels for the Soil Exposure–Direct Contact–Commercial/Industrial Screening Scenario and Soil Exposure–Direct Contact–Excavation Worker Screening Scenario were **not** exceeded.

5.3.2 In-use Metal Pipe

Evaluation of 40 CFR 761.61 Cleanup Levels:

Due to the fact that this pipe remains active, additional characterization sampling including the collection of wipe samples from the interior of the pipe was conducted per the request of USEPA. Based on the analytical results, Aroclor 1248 was detected at a concentration of 29.7 µg/100 cm² for the

interior surface of the east pipe location (adjacent the tunnel) and $9.3 \mu\text{g}/100 \text{ cm}^2$ at the interior west pipe location (within the exterior sump).

The in-use metal pipe formerly connected from the tunnel to the distribution box (currently connected from the tunnel to the exterior sump) is best described as non-porous surface. Additionally, due to the location of the pipe (mostly under the facility flooring), it would meet the definition of a low-occupancy area as described in 40 CFR 761.3. According to 40 CFR 761.61(a)(4)(ii), the cleanup level for non-porous surfaces in a low occupancy area is less than $100 \mu\text{g}/100 \text{ cm}^2$. Based on wipe sampling results from the interior of the pipe, PCBs were detected at a concentration of $9.3 \mu\text{g}/100 \text{ cm}^2$ and $29.7 \mu\text{g}/100 \text{ cm}^2$.

6.0 CONCLUSIONS AND PROPOSED CONTROL MECHANISMS

As described earlier in this document, the purpose of this report was to present a Risk-Based Disposal Application for the subject areas identified in Paragraphs 5a, .b. and c. of Appendix B (Statement of Work for TSCA Injunctive Relief) of the CD, and the associated TSCA WP developed for characterization of the Friction Holdings Site. A screening-level approach combined with applicable control mechanisms (e.g. cap, deed restriction) has been selected for evaluating risk at the Friction Holdings Site. This approach has been selected due to the Site characteristics and the availability of cleanup and/or screening levels for the applicable site exposure scenarios. A summary of the risk evaluation results and proposed physical and institutional controls to be implemented at the Site for each of the Subject Areas is provided below.

6.1 Former Distribution Box

Results from the characterization sampling indicated the presence of Aroclor 1248 at a concentration of 61.4 mg/kg in the soils located within the vicinity of the former distribution box at a depth of eight feet BGS. These soils and debris appear to be located at a depth of approximately 4 to 8 feet BGS and includes a total volume of approximately 400 cubic feet (10 feet x 10 feet x 4 feet). Analytical results from samples collected at a depth of four feet BGS within the same borings indicated no detectable concentration of PCBs. Sampling conducted immediately adjacent to the east along the pipe leading to the tunnel showed a concentration of 0.34 mg/kg Aroclor 1248 at a depth of four feet BGS and no detectable concentrations at a depth of eight feet BGS. Furthermore, sampling of native soils located along the former 18-inch RCP at a depth of eight feet were non-detect.

Based on the site characterization results and site-specific information gathering, there appears to be two potential receptors and/or exposure scenarios for the PCB-impacted soils and debris associated with the former distribution box:

- Direct contact of soils and debris by facility personnel; and
- Direct contact of soils and debris by excavation workers.

A brief discussion of these exposure scenarios and applicable screening levels are provided below.

Direct Contact of Soils By Facility Personnel

Due to the location and depth of the identified PCB-impacted soils, direct contact of soils and debris within the former distribution area by facility personnel is highly unlikely. This area is restricted to occasional/brief personnel foot traffic and/or mechanized equipment travel (e.g. forklift) at the surface only. The impacted soils and debris are located at a depth of four to six feet BGS; and the area is covered with concrete.

The PCB-impacted soils and concrete remnants remaining in the vicinity of the former distribution box and associated piping are best described as bulk PCB remediation waste. Additionally, due to the depth of the impacted soils (eight feet BGS) the location of the soils would meet the definition of a low-occupancy area as described in 40 CFR 761.3. As identified in 40 CFR 761.61(a)(4)(B), the cleanup level for bulk PCB remediation wastes in a low occupancy areas is greater than 25 ppm to 100 ppm if the site is covered with a cap meeting the requirements of paragraphs 40 CFR 761.61(a)(7) and (a)(8). The entire area of the former distribution box has been covered by concrete since abandonment; and a three-foot thick clay layer was observed above the impacted materials during Site characterization

activities. Total PCBs were detected at a concentration of 61.4 ppm within the soils, which is within the low occupancy range of greater than 25 ppm to 100 ppm as established in 761.61(a)(4)(B).

Direct Contact of Soils By Excavation Workers

Direct contact of PCB-impacted soils by excavation workers would be the most-likely potential exposure scenario associated with the former distribution area. Due to the potential and proposed surficial excavation work to be conducted within the vicinity of the former distribution box, an evaluation of established screening levels for the excavation worker soil direct contact scenario was conducted for PCBs in soil.

For purposes of this evaluation, the recently published IDEM RCG dated March 22, 2012, was used. According to this document, IDEM has established a screening level for Aroclor 1248 of 460 mg/kg for the excavation worker soil direct contact scenario. As previously stated, the soils within the vicinity of the former distribution box were found to contain 61.4 mg/kg Aroclor 1248 at a depth of eight feet BGS and 0.34 mg/kg Aroclor 1248 at a depth of four feet BGS adjacent to the piping, which are below the screening level established by the IDEM.

Proposed Physical and Institutional Controls Mechanisms

Based on characterization sampling results and the evaluation of risks associated with this area of the Site, Friction Holdings intends to manage the on-site disposal of remediation waste associated with the former distribution box by the combination of a cap and a deed restriction. A concrete cap currently covers the entire impacted area of the former distribution box. However, a portion of the concrete is cracked and/or damaged. Therefore, Friction Holdings intends to replace the existing concrete overlying the former distribution box area with a concrete cap that meets the design requirements presented in 40 CFR 761.61(a)(7), including a minimum thickness of six inches.

In addition to the installation of the required cap, Friction Holdings intends to record a deed restriction in accordance with the requirements stated in 40 CFR 761.61(a) (8) for the Site. As required in 40 CFR 761.61(a)(8), the deed restriction must be recorded accordance with state law and include the following:

- The land has been used for PCB remediation waste disposal and is restricted to use as a low occupancy area as defined in 761.3;
- Identify the existence of the cap and the requirement to maintain the cap in perpetuity; and
- The applicable cleanup levels left at the site, inside the fence, and/or under the cap.

A copy of the proposed deed restriction (Environmental Restrictive Covenant) is provided in **Attachment B**. It should be noted that once the concrete cap is replaced, disturbances to this area including excavation will be restricted as described in the deed restriction.

6.2 Former 18-inch RCP Filled and Sealed

Based on the site characterization results and site-specific information gathering, there appears to be two potential receptors and/or exposure scenarios for the PCB-impacted soils and the filled and sealed RCP remaining at the Site:

- Direct contact of soils by facility personnel; and
- Direct contact of soils by excavation workers.

A brief discussion of these exposure scenarios and applicable screening levels are provided below.

Direct Contact of Soils By Facility Personnel

Since the subject area is located in a low occupancy area and covered by an asphalt cap, the applicable clean-up level for this material according to 40 CFR 761.61 is greater than 25 ppm to 100 ppm. Based on the overall characterization sampling conducted in November 2010, it appears that low concentration PCB-impacted soils (less than 1 mg/kg) are located within the pipe bedding along the former 18-inch RCP. Soils at this concentration are well below the cleanup levels and/or screening levels established for Bulk Remediation Waste.

Due to the location and depth of the identified PCB-impacted soils and the abandoned 18-inch RCP, direct contact of soils and the former RCP by facility personnel is highly unlikely. This area is restricted to occasional/brief personnel foot traffic and/or vehicle traffic at the surface only. The impacted soils and RCP are located at a depth of four to six feet BGS and the area is covered with asphalt.

Direct Contact of Soils By Excavation Workers

Direct contact of PCB-impacted soils by excavation workers would be a potential exposure scenario associated with the former 18-inch area. For purposes of this evaluation, the recently published IDEM RCG dated March 22, 2012, was used. According to this document, IDEM has established a screening level for Aroclor 1248 of 460 mg/kg for the excavation worker soil direct contact scenario. As previously stated, the soils within the vicinity of the 100 foot section of the former 18-inch RCP were found to contain 0.065 mg/kg Aroclor 1254 and the soils adjacent the 220 foot section of the former 18-inch RCP were found to contain 0.16 mg/kg Aroclor 1248. These soils are located from four to six feet BGS. These concentrations are well below the screening level established by the IDEM for excavation workers as well as direct contact by Industrial Workers scenario.

Proposed Physical and Institutional Controls Mechanisms

Although characterization sampling results conducted as part of the TSCA SOW indicated that the concentrations of PCBs in soils adjacent the former 18-inch RCP were below 1 ppm, Friction Holdings intends to restrict access to the former 18-inch RCP by a combination of a cap (constructed in accordance with 40 CFR 761.61(a)(7)) and a deed restriction prepared in accordance with 40 CFR 761.61(a) (8). A combination asphalt and concrete cap is already in place for the entire section of the former 18-inch RCP.

The deed restriction, among other things, will be designed to restrict access to the 100 and 220 foot sections of the former 18-inch RCP in perpetuity. A copy of the proposed deed restriction (Environmental Restrictive Covenant) and the details of the associated site restrictions are provided as **Attachment B**.

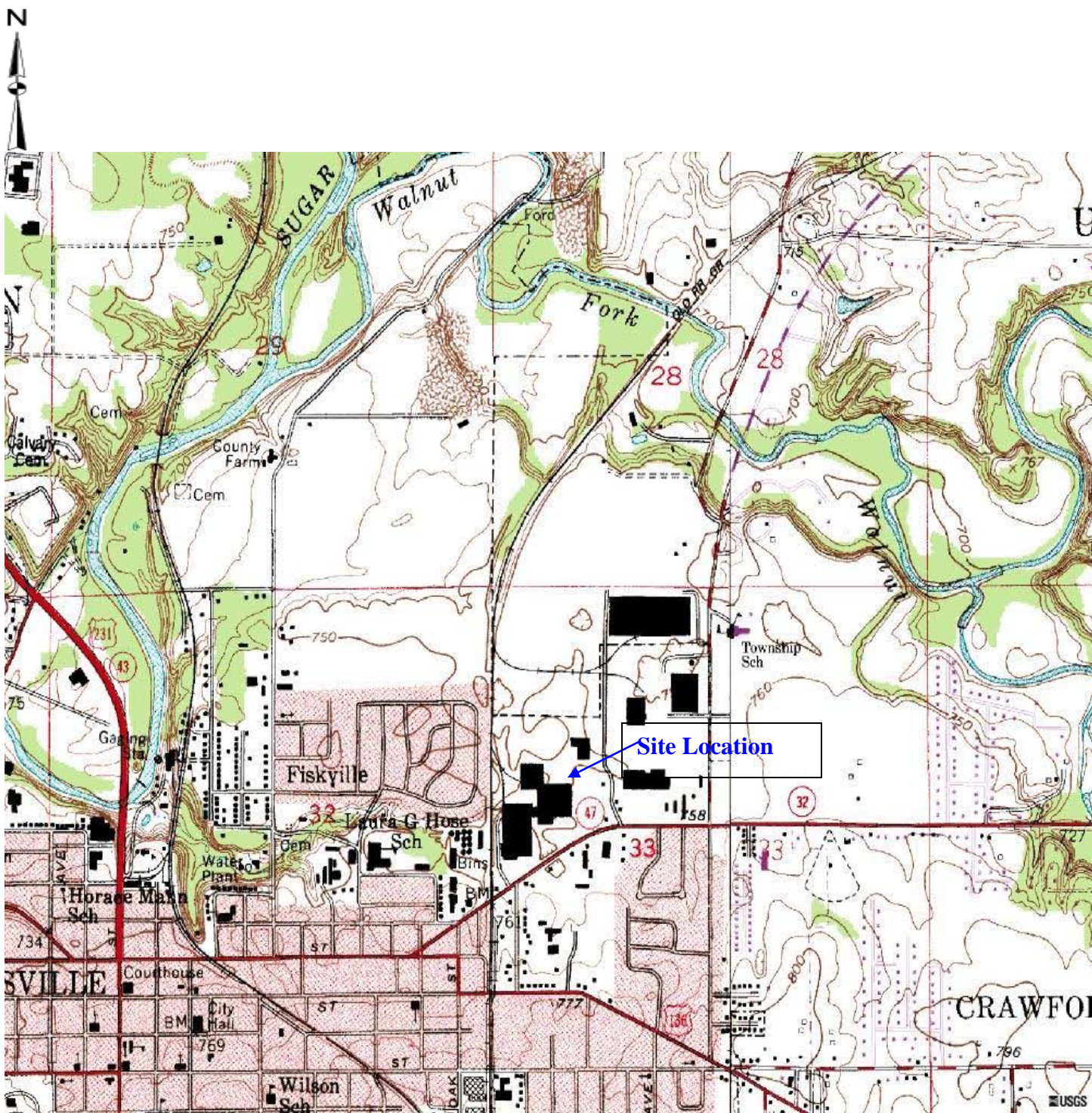
6.3 Pipe Leading from the Tunnel to the Distribution Box

The pipe leading from the tunnel to the distribution box is active and currently discharges condensate collected in the tunnel to the sump located outside of the boiler room. This pipe was previously cleaned during self-implementing procedures conducted in 1999 and beyond. In effort to characterize current conditions in the media surrounding the pipe, characterization sampling was conducted adjacent the pipe near the former distribution box. Based on the analytical results of the characterization sampling collected adjacent to the west end of this pipe, Aroclor 1248 was detected at a concentration of 0.34 mg/kg within the composite of the fill material from the piping. Since the subject area is located in a

low occupancy area, the applicable clean-up level for this material according to 40 CFR 761.61 is less than 25 ppm. Therefore, no further action would be required for management of these soils.

Due to the location of the pipe under the boiler room and portions of West Plant and the fact that Friction Holdings intends to continue use of the pipe, wipe samples of the interior of the pipe were also collected in 2013. By definition the pipe is best described as a non-porous surface, and the location of the pipe (mostly under the facility flooring) would meet the definition of a low-occupancy area as described in 40 CFR 761.3. According to 40 CFR 761.61(a)(4)(ii), the cleanup level for non-porous surfaces in a low occupancy area is less than $100 \mu\text{g}/100 \text{ cm}^2$ without conditions. Based on wipe sampling results from the interior of the pipe, PCBs were detected at a concentration of $9.3 \mu\text{g}/100 \text{ cm}^2$ and $29.7 \mu\text{g}/100 \text{ cm}^2$ and no further action would be required for the pipe.

FIGURES

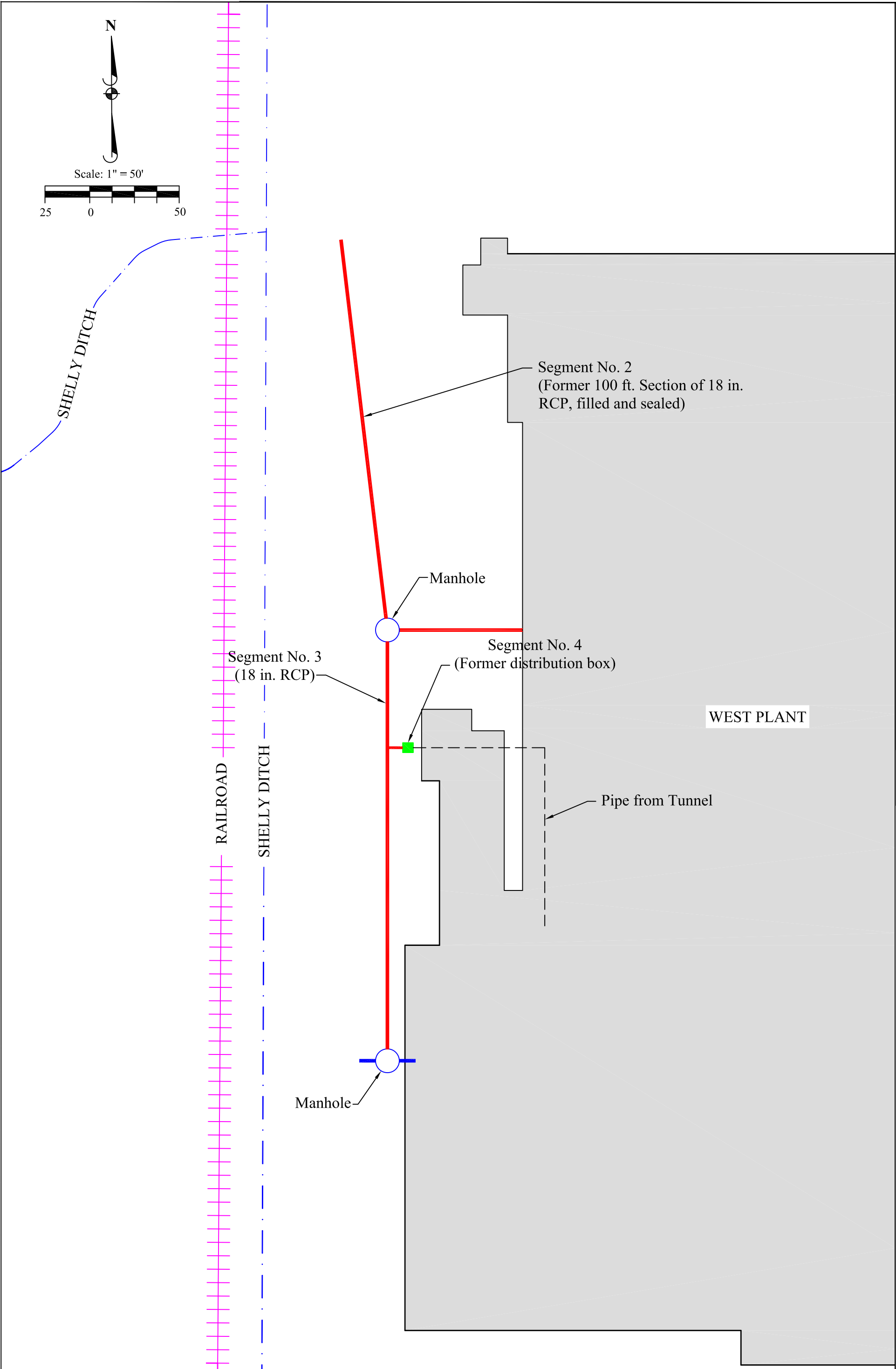



Scale 1:13,860

Vicinity Map
Friction Holdings
1201 Darlington Avenue
Crawfordsville, IN

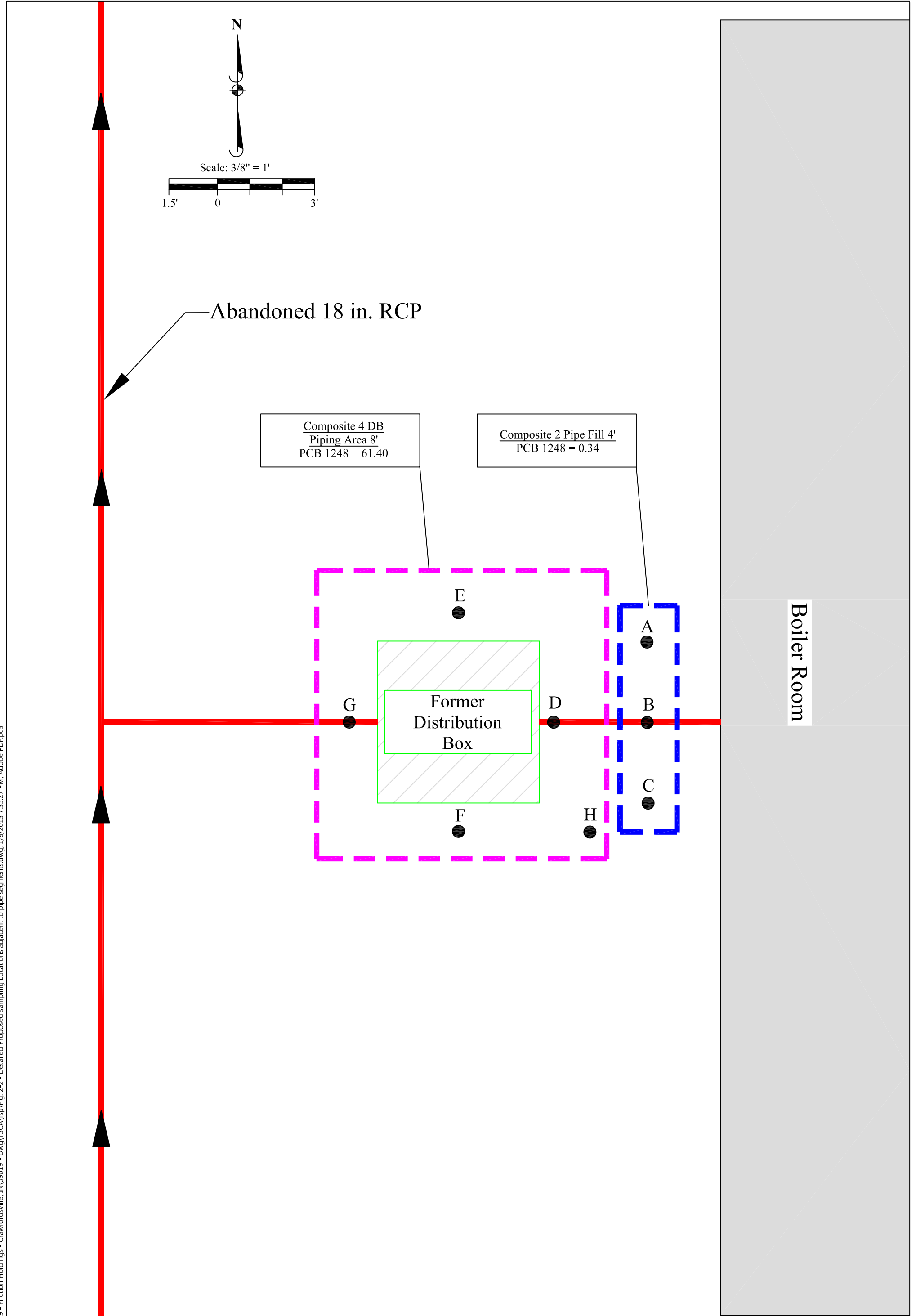
Figure 1

Project # 09019.04




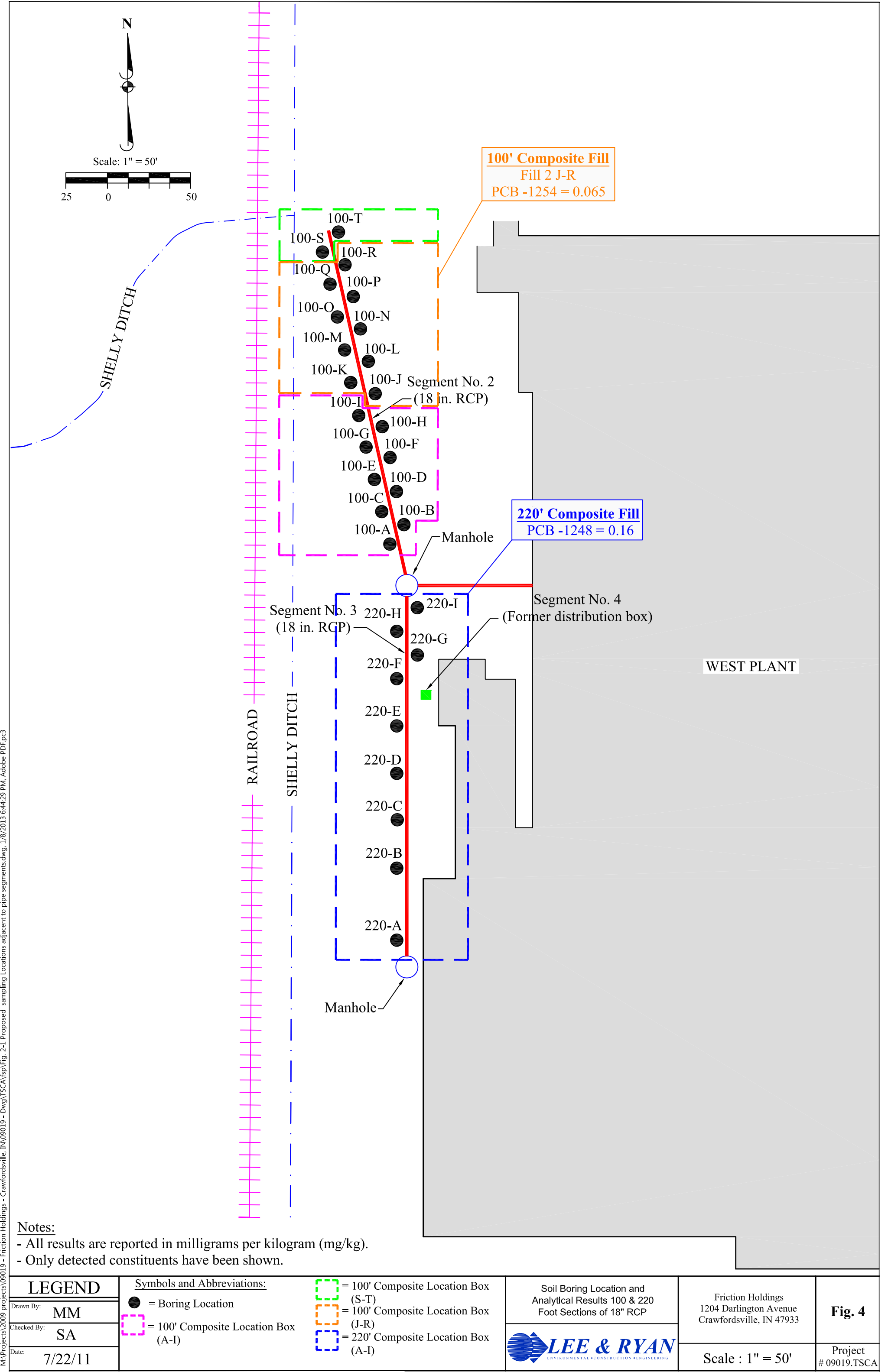
LEGEND		<u>Symbols and Abbreviations:</u>	Site Layout Map TSCA RBDA	Friction Holdings 1204 Darlington Avenue Crawfordsville, IN 47933	Fig. 2
Drawn By:	CW				
Checked By:	RSP				
Date:	09/13/13				
<u>Note:</u> Based on Current Condition Report, Exponent 2004.			Scale : 1" = 50'	Project # 09019.04	

M:\Projects\2009 projects\09019 - Friction Holdings - Crawfordsville, IN\09019 - Dwg\TSCA\fsp\Fig. 2.1 - Former 18 inch Layout.dwg, 9/13/2013 10:24:19 AM, Adobe PDF.pc3



M:\Projects\2009 projects\09019 - Friction Holdings - Crawfordsville, IN\09019 - Dwg\TSCA\isp\Fig. 2-2 - Detailed Proposed sampling Locations adjacent to pipe segments.dwg, 1/8/2013 7:35:27 PM, Adobe PDF, pc3

LEGEND		<p>TSCA Detailed Sampling Location Area Adjacent to Former Distribution Box and Associated Piping</p> 	<p>Friction Holdings 1204 Darlington Avenue Crawfordsville, IN 47933</p>	Fig. 3
Drawn By:	CW			
Checked By:	SA			
Date:	7/22/11	Scale : 3/8" = 1'		
<p><u>Symbols and Abbreviations:</u></p> <p>● = Proposed Boring Location □ = Composite Piping Area</p> <p>□ = Composite Location Box</p> <p><u>Notes:</u></p> <p>- All results are reported in milligrams per kilogram (mg/kg).</p> <p>- Only detected constituents have been shown.</p>		Project # 09019.TSCA		



Notes:

- All results are reported in milligrams per kilogram (mg/kg).
- Only detected constituents have been shown.

LEGEND		Symbols and Abbreviations:		Soil Boring Location and Analytical Results 100 & 220 Foot Sections of 18" RCP	Friction Holdings 1204 Darlington Avenue Crawfordsville, IN 47933	Fig. 4
Drawn By:	MM	● = Boring Location	<div><div></div> = 100' Composite Location Box (S-T)</div> <div><div></div> = 100' Composite Location Box (J-R)</div> <div><div></div> = 220' Composite Location Box (A-I)</div>			
Checked By:	SA	<div><div></div> = 100' Composite Location Box (A-I)</div>		<div><div></div>LEE & RYAN<div>ENVIRONMENTAL • CONSTRUCTION • ENGINEERING</div></div>	Scale : 1" = 50'	Project # 09019.TSCA
Date:	7/22/11					

M:\Projects\2009 projects\09019 - Friction Holdings - Crawfordsville, IN\09019 - Dwg\TSCA\isp\Fig. 2-1 Proposed sampling Locations adjacent to pipe segments.dwg, 1/8/2013 6:44:29 PM, Adobe PDF.pc3

TABLES

TABLE 1
TSCA DISTRIBUTION BOX ANALYTICAL RESULTS
Friction Holdings, LLC
1204 Darlington Avenue, Crawfordsville, IN

Sample ID	Collection Date	Matrix	Units	PCB-1242 (Aroclor 1242)	PCB-1254 (Aroclor 1254)	PCB-1016 (Aroclor 1016)	PCB-1232 (Aroclor 1232)	PCB-1248 (Aroclor 1248)	PCB-1221 (Aroclor 1221)	PCB-1260 (Aroclor 1260)
Composite-2-Pipe Fill	11/11/2010	Solid	mg/kg	<0.037	<0.037	<0.037	<0.037	0.34	<0.037	<0.037
Composite-3-Pipe 8 FT	11/11/2010	Solid	mg/kg	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037
Composite-4-DB 8 FT	11/11/2010	Solid	mg/kg	<3.8	<3.8	<3.8	<3.8	61.4	<3.8	<3.8
DB-Composite-1 Fill	11/11/2010	Solid	mg/kg	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038
DUP	11/11/2010	Solid	mg/kg	<0.037	<0.037	<0.037	<0.037	0.33	<0.037	<0.037
TRIP BLANK	11/11/2010	Water	mg/L	<0.00051	<0.00051	<0.00051	<0.00051	<0.00051	<0.00051	<0.00051

mg/kg = milligrams per Kilogram

mg/L = milligrams per Liter

TABLE 2
TSCA 100' REINFORCED CONCRETE PIPE ANALYTICAL RESULTS

Friction Holdings, LLC
1204 Darlington Avenue, Crawfordsville, IN

Sample ID	Collection Date	Matrix	Units	PCB-1242 (Aroclor 1242)	PCB-1254 (Aroclor 1254)	PCB-1016 (Aroclor 1016)	PCB-1232 (Aroclor 1232)	PCB-1248 (Aroclor 1248)	PCB-1221 (Aroclor 1221)	PCB-1260 (Aroclor 1260)
100' Composite Fill 2 J-R	11/10/2010	Solid	mg/kg	<0.042	0.065	<0.042	<0.042	<0.042	<0.042	<0.042
100' Composite Fill 3 S-T	11/10/2010	Solid	mg/kg	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039
100' Composite Fill1 A-I	11/10/2010	Solid	mg/kg	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038
100' Composite Native 1 A-I	11/10/2010	Solid	mg/kg	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041
100' Composite Native 2 J-R	11/10/2010	Solid	mg/kg	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038	<0.038
100' Composite Native 3 S-T	11/10/2010	Solid	mg/kg	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036	<0.036
TRIP BLANK	11/10/2010	Water	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

mg/kg = milligrams per Kilogram

mg/L = milligrams per Liter

TABLE 3
TSCA 220' REINFORCED CONCRETE PIPE ANALYTICAL RESULTS

Friction Holdings, LLC
1204 Darlington Avenue, Crawfordsville, IN

Sample ID	Collection Date	Matrix	Units	PCB-1242 (Aroclor 1242)	PCB-1254 (Aroclor 1254)	PCB-1016 (Aroclor 1016)	PCB-1232 (Aroclor 1232)	PCB-1248 (Aroclor 1248)	PCB-1221 (Aroclor 1221)	PCB-1260 (Aroclor 1260)
220' Composite Fill	11/10/2010	Solid	mg/kg	<0.048	<0.048	<0.048	<0.048	0.16	<0.048	<0.048
220' Composite Native	11/10/2010	Solid	mg/kg	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037	<0.037
DUP	11/10/2010	Solid	mg/kg	<0.040	<0.040	<0.040	<0.040	0.084	<0.040	<0.040
FIELD BLANK 1	11/10/2010	Water	mg/L	<0.00055	<0.00055	<0.00055	<0.00055	<0.00055	<0.00055	<0.00055
RINSATE BLANK	11/10/2010	Water	mg/L	<0.00052	<0.00052	<0.00052	<0.00052	<0.00052	<0.00052	<0.00052
TRIP BLANK	11/10/2010	Water	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

mg/kg = milligrams per Kilogram

mg/L = milligrams per Liter

ATTACHMENT A








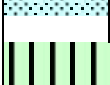






Soil Boring and Monitoring Well Construction Log

PROJECT NAME:		Friction Holdings				BORING/WELL NUMBER:		DB Comp 1-B	
PROJECT NUMBER:		09019- Associated Piping Area				DRILLING DATE:		11/11/2010	
PROJECT LOCATION:		Crawfordsville, IN				FIELD GEOLOGIST:		Shane Schmidt	
DRILLING CONTRACTOR:		EFS				TOTAL DEPTH:		12'	
DRILLER NAME:		Alan				WELL DIAMETER / MATERIAL:		NA	
RIG TYPE:		GeoProbe 6620 DT / Hollow Stem Auger				SAMPLE ID & DEPTH:		DB Composite -2 Pipe Fill & Composite-3 Pipe- 8 ft.	

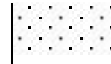


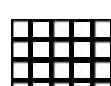


SAMPLE TYPE	SAMPLE DATE	SAMPLE DEPTH (FT)	SAMPLE ID	BORING INTERVAL	% RECOVERY	PID (ppm)	SATURATION	DEPTH (ft)	GRAPHIC LITHOLOGY	DESCRIPTION INTERVAL (ft)	Groundwater level (saturated layer): NA	
											SOIL LITHOLOGY	WELL CONSTRUCTION
Grab	11/11/2010	4'	DB Composite -2 Pipe Fill					1		3' SAND (SP), dark yellowish brown (10YR4/4) moist, compact	No well constructed	
								2				
								3				
								4				
								5				
								6				
								7				
								8				
								9				
								10				
								11				
								12				
										11' CLAY (CL), dark yellowish brown (10YR3/4), moist, soft, trace sand and gravel		
										End of boring @ 12'		

[illegible]

SOIL BORING LOG KEY

	TOPSOIL / CONCRETE or ASPHALT & FILL
GP 	GRAVEL, Poorly Graded, sandy gravel mixtures, little or no fines
GW 	GRAVEL, Well Graded, sandy gravel mixtures, little or no fines
SW 	SAND, Well Graded, sand & gravel mixtures, little or no fines
SP 	SAND, Well Graded, sand & gravel mixtures, little or no fines
SM 	SILTY SAND
SC 	CLAYEY SAND
ML 	SILT, Low Plasticity, Silts, clayey silts, sandy silts
MH 	SILT, High Plasticity, Inorganic Silts, clayey silts. & sandy silts
CL 	CLAY, Low Plasticity, Inorganic Clays, silty clays. & sandy clays
CH 	CLAY, High Plasticity, Clays, silty clays, & sandy clays
OL 	ORGANIC CLAYS & SILTS, Low Plasticity
OH 	ORGANIC CLAYS & SILTS, High Plasticity
PT 	PEAT, Humus or swamp soils with high organic content

WELL CONSTRUCTION LOG KEY

	RISER
	SCREEN
	BENTONITE
	CEMENT & BENTONITE SLURRY
	SATURATION
	SAMPLE INTERVAL

ATTACHMENT B

RELEASED

DATE 10/13/17

RIN # 2011-005534

INITIALS [signature]

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ENVIRONMENTAL RESTRICTIVE COVENANT

FRICTION HOLDINGS LLC

THIS Environmental Restrictive Covenant ("ERC") is made this XX day of XX, 2013, by Friction Holdings LLC 1204 Darlington Avenue, Crawfordsville, Indiana (together with its successors and assignees, collectively "Friction Holdings" or the "Owner").

A. Friction Holdings owns approximately 40 acres of real property in Montgomery County, Indiana located on Darlington Avenue in Crawfordsville, more particularly described in **Exhibit A** attached hereto ("Real Estate"). Friction Holdings (f/k/a Raymark Industries, Inc.) acquired this Real Estate by deed on October 28, 1987, and recorded on _____, as Deed Record Number 258, page 492, in the Office of the Recorder of Montgomery County, Indiana. A map of the Real Estate is attached as **Exhibit B**.

B. Friction Holdings and its predecessors have used the Real Estate for a variety of manufacturing operations dating back to 1951. On July 25, 2009, Friction Holdings entered into a federal court Consent Decree with the United States that requires Friction Holdings to implement certain actions under federal environmental laws to address historic environmental impacts arising from these manufacturing operations, including the presence of polychlorinated biphenyls ("PCBs"). On October 14, 2010, the United States Environmental Protection Agency ("EPA") approved Friction Holdings' proposed TSCA Characterization Work Plan.

C. Friction Holdings has completed the active remediation work required by the approved TSCA Characterization Work Plan. Notwithstanding implementation of these measures, residual levels of PCBs will remain at portions of the Real Estate above levels that EPA considers appropriate for residential development or other unrestricted future uses. As a result, this ERC imposes certain restrictions on the future use of the Real Estate to ensure continued protection of human health and the environment. The PCBs that are being addressed by the remedial measures and that will remain at the Real Estate are depicted in Exhibit B and listed in **Exhibit C**.

D. Relevant documents relating to this remediation project may be reviewed: (a) at the Indiana Department of Environmental Management's ("IDEM") offices located at Indiana Government Center North, 100 N. Senate Ave., Indianapolis, Indiana, 46206, or by contacting IDEM at the noted address; (b) at EPA's offices located at 77 W. Jackson Boulevard, Chicago, Illinois, 60604; or (c) electronically by searching IDEM's Virtual File Cabinet through IDEM's web site (www.in.gov/idem/). The EPA identification number for the Real Estate is EPA #IND 006061477.

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RIN # 2017-065534
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Definitions

"Owner" means at any given time the then-current title holder of fee simple title to the Real Estate or any portion thereof.

"EPA" means the U.S. Environmental Protection Agency, its successor entities, and those persons or entities acting on its behalf.

"IDEM" means the Indiana Department of Environmental Management, its successor entities, and those persons or entities acting on its behalf.

"Friction Holdings" means Friction Holdings LLC, a Delaware Limited Liability Corporation and its predecessors and successors by merger, purchase, consolidation or otherwise of all or substantially all of its business and assets.

Restrictions

Friction Holdings hereby covenants and declares that the Real Estate is subject to the following restrictions and provisions and intends and declares that these restrictions, provisions and covenants shall run with the land and be binding upon each Owner and each Owner's Related Parties (as hereafter defined).

1. Restrictions. Unless modified or terminated pursuant to Paragraph 8 below, the following land use and activity restrictions shall hereafter apply to the Real Estate.
 - (a) There shall be no construction of wells or other devices on the Restricted Real Estate to extract groundwater for consumption, irrigation, or any other use, except for wells and devices that are part of an approved remediation system or are otherwise part of an environmental investigation or remediation activity.
 - (b) The Real Estate shall not be used for any residential purpose including, but not limited to, residences, hotels or motels, hospitals or in-patient medical care, playgrounds or recreational facilities, or daily care facilities (e.g., daycare centers, schools, senior citizen facilities, nursing homes, or assisted living facilities).
 - (c) The Real Estate shall not be used for purposes of growing food crops.
 - (d) The existing concrete pavement area depicted and legally described in Exhibit B as the "Limits of the Engineered Barrier" serves as an "engineered barrier" to prevent direct contact with underlying soils and infiltration of precipitation and potential migration of PCBs to groundwater. This engineered barrier must be protected and maintained. Any Owner shall annually inspect the engineered barrier and repair or seal any significant cracks or deterioration found. No person, including any Owner, shall excavate, remove, or otherwise disturb the integrity of this engineered barrier unless approved pursuant to paragraph 8 below.

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- (e) As provided in the approved TSCA Characterization Work Plan, two sections of an abandoned, buried reinforced concrete pipe and a sub-surface distribution box and associated piping were closed in place and are depicted on Exhibit B. No Owner shall excavate or disturb these closed-in-place features unless approved pursuant to paragraph 8 below.
2. Restrictions to Run with the Land. Unless and until modified or terminated pursuant to paragraph 8 below, Friction Holdings intends and declares that any future conveyance of the Real Estate will be subject to this ERC and that the restrictions and other requirements in this ERC shall run with the Real Estate, shall continue as a servitude running in perpetuity with the Real Estate, and shall be binding upon the current and all future Owners of the Real Estate and their successors, assigns, parents, affiliates, heirs and lessees and their authorized agents, employees, contractors, representatives, agents, lessees, licensees, invitees, guests, or persons acting under their direction or control (hereinafter "Related Parties"). No transfer, mortgage, lease, license, easement, or other conveyance of any interest in all or any part of the Real Estate by any person shall affect the restrictions set forth herein. By taking title to an interest in or occupancy of the Real Estate, any subsequent Owner, tenant, or Related Party of such Owner or tenant, agrees to comply with all of the restrictions set forth in paragraph 1 above, and with the other terms of this Covenant.
3. Access: Any Owner consents to IDEM, EPA, and Friction Holdings, and their designated representatives, having the right and an easement to enter upon the Real Estate at reasonable times for the purpose of determining and monitoring compliance with this ERC and the effectiveness of the remedial action. This right of access includes, but is not limited to, the right of Friction Holdings to perform any maintenance or remediation activity necessary to maintain compliance with its obligations under the Consent Decree and any Consent Decree amendment, and the right of Friction Holdings, IDEM and EPA to inspect the Real Estate, take samples, inspect records, and conduct periodic reviews of the remedial action.
4. Notice for Future Conveyances. Any Owner agrees to include in any instrument, whether voluntary or involuntary, that conveys any interest in any portion of the Real Estate, including but not limited to deeds, leases and subleases (excluding mortgages, liens, similar financing interests, and other non-possessory encumbrances), the following notice provision (with blanks to be filled in):

NOTICE: THE INTEREST CONVEYED HEREBY IS SUBJECT TO AN ENVIRONMENTAL RESTRICTIVE COVENANT, DATED XX 2013, RECORDED IN THE OFFICE OF THE RECORDER OF MONTGOMERY COUNTY ON XX, 2013, INSTRUMENT NUMBER (or other identifying reference) IN FAVOR OF AND ENFORCEABLE BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY, THE INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, AND FRICTION HOLDINGS LLC.

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5. Notice to Friction Holdings, EPA and IDEM of the Conveyance of Property. Any Owner agrees to provide notice to EPA, IDEM, and Friction Holdings of any conveyance (voluntary or involuntary) of any ownership interest in the Real Estate (excluding mortgages, liens, similar financing interests, and other non-possessory encumbrances). Owner must provide IDEM with the notice within thirty (30) days of the conveyance and: (a) include a certified copy of the instrument conveying any interest in any portion of the Real Estate, and (b) if it has been recorded, its recording reference, and (c) the name and business address of the transferee.
6. Indiana Law. This ERC shall be governed by, and shall be construed and enforced according to, the laws of the State of Indiana.
7. Enforcement. Friction Holdings, on behalf of itself and its successors in title, intends and agrees that IDEM, pursuant to IND. CODE § 13-14-2-6 and as a third party beneficiary, and EPA, as a third party beneficiary, are entitled to enforce the restrictions and covenants in this ERC by specific performance or other legal action in a court of competent jurisdiction against any Owner. Friction Holdings shall also have the right to enforce the provisions and restrictions set forth in this ERC. All remedies available hereunder shall be in addition to any and all other remedies at law or equity. Damages alone are insufficient to compensate EPA, IDEM, or Friction Holdings if any Owner or its Related Parties breaches this ERC or otherwise defaults hereunder. As a result, if any Owner of the Real Estate, or any Owner's Related Parties, breaches this ERC or otherwise defaults hereunder, EPA, IDEM and Friction Holdings shall each have the right to demand and obtain specific performance and/or immediate injunctive relief to enforce this ERC in addition to and other remedies they may have at law or at equity.
8. Modification and Termination. This ERC shall only be amended, modified, or terminated with EPA's, IDEM's and Friction Holdings' prior written approval. Any request to terminate this ERC, or to modify the restrictions herein, must be submitted in writing concurrently to EPA, IDEM and Friction Holdings at the addresses provided in paragraph 12 below by the Owner of the Real Estate at the time of the proposed termination or modification. If EPA, IDEM and Friction Holdings approve the request in writing, the Owner of the Real Estate shall record such amendment, modification, or termination with the Office of the Recorder of Montgomery County within thirty (30) days of receiving all approvals, and shall then provide a true copy of the recorded amendment, modification, or termination to EPA, IDEM and Friction Holdings within thirty (30) days after recordation.
9. Non-Waiver: No failure on the part of Friction Holdings, EPA, or IDEM at any time to require performance by any Owner of the Real Estate, or by any Owner's Related Party, of any term of this ERC shall be taken or held to be a waiver of such term or in any way affect Friction Holdings', EPA's or IDEM's rights to enforce such term, and no waiver on the part of Friction Holdings, EPA, or IDEM of any term hereof shall be taken or held to be a waiver of any other term hereof or the breach thereof.

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10. Conflict of and Compliance with Laws. If any provision of this ERC is also the subject of any law or regulation established by any federal, state, or local government, the strictest standard or requirement shall apply. Compliance with this ERC does not relieve the Owner of its obligation to comply with any other applicable laws.
11. Change in Law or Regulation. In the event of any change in applicable law or regulations, this ERC shall be interpreted so as to ensure the continuing validity and enforceability of the restrictions listed in paragraph 1 above. In no event shall this ERC be rendered unenforceable if Indiana's laws, regulations, or policies (including those for environmental restrictive covenants, closure levels, or institutional or engineering controls) change as to form or content. All statutory references include any successor provisions.
12. Notices. All notices and other communications made hereunder shall be in writing, shall be deemed to have been duly given on the date of delivery if delivered in person or the following day after being sent by overnight delivery by a nationally recognized overnight delivery service such as UPS or Federal Express, or three (3) business days after being mailed by U.S. certified mail (return receipt requested), and shall be addressed as follows (or to such other address as one of the following may advise by notice as provided herein):

To EPA:

U. S. Environmental Protection Agency—
Region 5
Attn: Director, Superfund Division
77 West Jackson Boulevard
Chicago, Illinois 60604

To Friction Holdings:

Bill F. Burke
Raybestos Powertrain LLC
1204 Darlington Avenue
Crawfordsville, IN 47933

With a copy to:

Joseph Madonia
Barnes & Thornburg LLP
One North Wacker Drive
Suite 4400
Chicago, Illinois 60606-2833

To IDEM:

IDEM, Office of Land Quality
IGCN-Suite 1154
100 North Senate Avenue, Mail Code 65-45
Indianapolis, Indiana 46204-2251

In addition to sending notice to the persons above, all notices required by this ERC to be sent to the-current Owner shall also be sent to its Registered Agent of record for the State of Indiana, if any, in accordance with the records of the Indiana Secretary of State.

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13. Severability. If any portion of this ERC or other term set forth herein is determined by a court of competent jurisdiction to be invalid for any reason, the surviving portions or terms of this ERC shall remain in full force and effect as if such portion found invalid had not been included herein.
14. Incorporation of Exhibits. All exhibits attached hereto are incorporated into and made part of this ERC.
15. Authority to Execute and Record. The undersigned person executing this ERC on behalf of the Friction Holdings represents and certifies that he or she is duly authorized and has been fully empowered to execute and record, or have recorded, this ERC.
16. Liability. An Owner's rights and obligations under this instrument terminate upon transfer of the Owner's interest in the Real Estate, except that liability for acts or omissions occurring prior to transfer shall survive transfer.

The undersigned person executing this Covenant on behalf of the Friction Holdings represents and certifies that he/she is duly authorized, and has been fully empowered to execute and record this Covenant on behalf of the Friction Holdings as the current owner.

IN WITNESS WHEREOF, the Friction Holdings LLC, the said owner of the Real Estate described above has caused this Environmental Restrictive Covenant to be executed on the _____ day of _____, 2013.

Friction Holdings LLC

By: _____
Signature

Name: _____

Title: _____

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RIN # 2017-005534
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STATE OF _____)
) SS:
COUNTY OF _____)

Before me, the undersigned, a Notary Public in and for said County and State, personally appeared _____, the _____ of Friction Holdings LLC, a Delaware Limited Liability Corporation, who acknowledged the execution of the foregoing Environmental Restrictive Covenant for and on behalf of said entity.

Witness my hand and Notarial Seal this ____ day of _____, 201__.

(Signature)

(Printed Name)
Notary Public
Residing in _____ County, _____

My Commission Expires:

This instrument prepared by John M. Kyle III, Barnes & Thornburg, LLP, 11 South Meridian Street, Indianapolis, Indiana, 46204.

I affirm under the penalties for perjury, that I have taken reasonable care to redact each Social Security number in this document unless required by law. John M. Kyle III

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RIN # 2017-00588
INITIALS Jpw

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EXHIBIT A

LEGAL DESCRIPTION OF REAL ESTATE

The following Real Estate in Montgomery County in the State of Indiana, being a part of the northwest quarter and southwest quarter of Section 33, Township 19 north, Range 4 west, Montgomery County, Crawfordsville, Indiana, and described to wit:

Beginning at a point on the east line of the Penn Central Railroad (formerly Pennsylvania), said point being north 90°00'00" east 30.00 feet of the southwest corner of the northwest quarter said above, and running thence north 00°00'00" east 1054.00 feet to a point; thence north 90°00'00" east 1214.68 feet; thence south 00°35'50" east 1089.12 feet to the old centerline of Old Lebanon Road, witness the north highway right-of-way line north 00°35'50" west 16.56 feet; thence along the centerline of Old Lebanon Road south 58°45'02" west 1434.66 feet to the east line of the said Penn Central Railroad, witness the north highway right-of-way line north 00°00'00" east 24.05 feet; thence north 00°00'00" east along said east line 780.12 feet to the point of beginning. Containing an area of 40.657 acres, more or less, and subject to a highway easement described as:

Beginning at a point on the said east line of the Penn Central Railroad, said point being south 00°00'00" east 756.07 feet from the intersection of the south line of the said northwest quarter and said east line, and running thence north 57°00'18" east 1041.92 feet to an Indiana State Highway marker, said point being a point of curve, said curve being concave to the right with a radius of 1,415 feet and having a chord bearing north 64°35'14" east 373.54 feet to an Indiana State Highway marker; thence north 55°49'42" east 17.59 feet; thence south 00°35'50" east 16.56 feet; thence south 58°45'02" west 1434.66 feet to the said east line of the Penn Central Railroad; thence north 00°00'00" east 24.05 feet to the point of beginning.

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DATE 6/13/17

RIN # 2017-005534

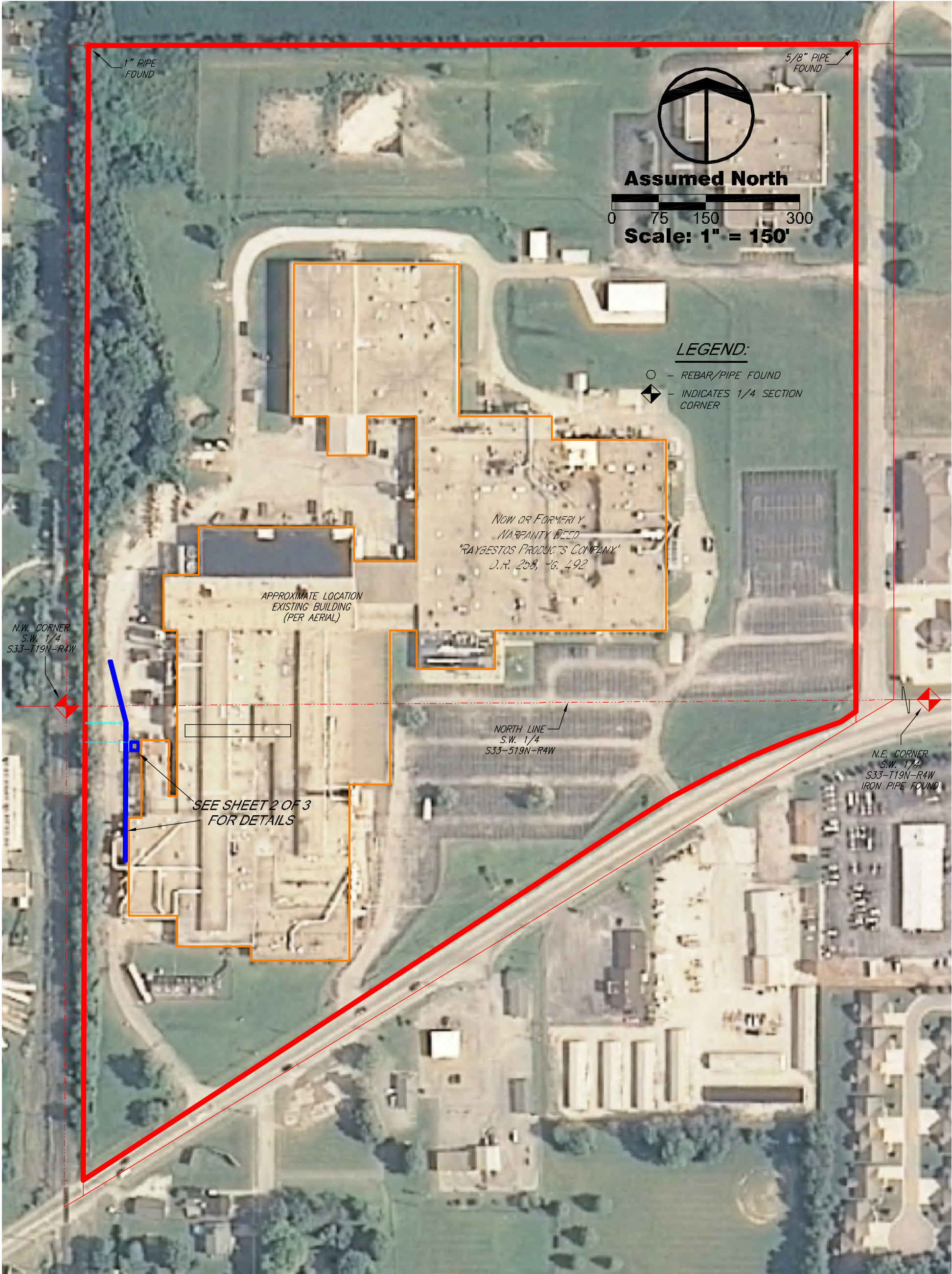
INITIALS MP

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EXHIBIT B

SITE MAP



OVERALL SITE EXHIBIT

Prepared For: MYERS ENVIRONMENTAL, INC.

Project Location: FRICTION HOLDINGS, LLC
1204 DARLINGTON AVENUE
CRAWFORDSVILLE, IN 47933
PART OF W. 1/2 OF S 33 - T 19 N - R 4 W
NORTH UNION TOWNSHIP
MONTGOMERY COUNTY, INDIANA

JOB #: 2010-128B

FILE #: 2010-128B.DWG

DATE: 2/11/13

APPROVED BY: SMC

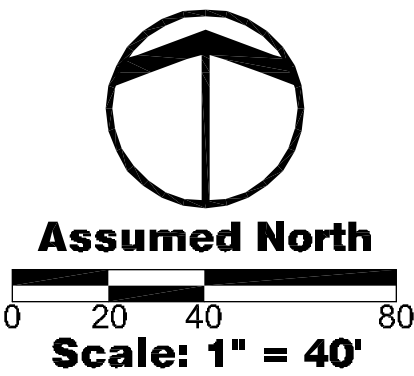
DRAWN BY: MTL



coor[®]
consulting & land services
corporation

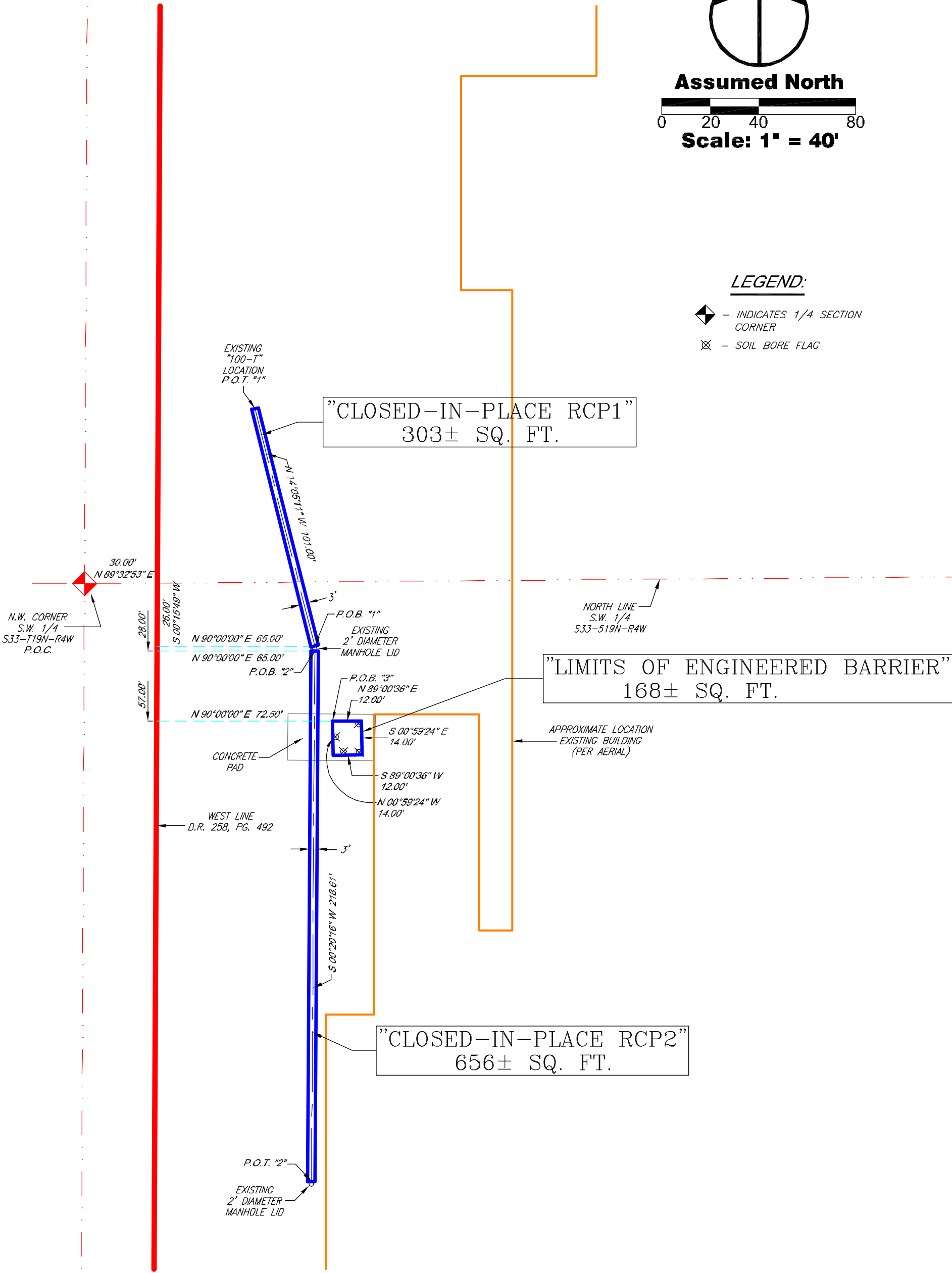
303 West Main Street, Knightstown, Indiana 46148
Ph:(765)345-5943 Toll Free:(888)593-2667 Fax:(765)345-5692
Web: www.coorconsulting.com Email: coorconsulting@aol.com


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LEGEND:

- INDICATES 1/4 SECTION CORNER
- SOIL BORE FLAG



DETAIL EXHIBIT		JOB #: 2010-128B		 coor [®] consulting & land services corporation	
Prepared For: MYERS ENVIRONMENTAL, INC.		FILE #: 2010-128B.DWG			
Project Location: FRICION HOLDINGS, LLC 1204 DARLINGTON AVENUE CRAWFORDSVILLE, IN 47933 PART OF W. 1/2 OF S 33 - T 19 N - R 4 W NORTH UNION TOWNSHIP MONTGOMERY COUNTY, INDIANA		DATE: 2/11/13			
		APPROVED BY: SMC			
		DRAWN BY: MTL		303 West Main Street, Knightstown, Indiana 46148 Ph:(765)345-5943 Toll Free:(888)593-2667 Fax:(765)345-5692 Web: www.coorconsulting.com Email: coorconsulting@aol.com	

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DESCRIPTIONS
"A part of Deed Record 258, Page 492"

"CLOSED-IN-PLACE RCP1"
A 3 foot wide tract of land being a part of the West Half of the Northwest and Southwest Quarters of Section 33, Township 19 North, Range 4 West, in North Union Township, Montgomery County, Indiana, the centerline of said tract of land being more particularly described as follows:

COMMENCING at the Northwest corner of said Southwest Quarter Section; thence North 89 degrees 32 minutes 53 seconds East (bearing system based on the Indiana State Plane Coordinate System NAD 1983 (1997) West Zone) along the North line thereof a distance of 30.00 feet to the West line of a tract of land described in Deed Record 258, Page 492 in the Office of the Recorder of Montgomery County, Indiana; thence South 00 degrees 15 minutes 49 seconds West along the West line thereof a distance of 26.00 feet; thence North 90 degrees 00 minutes 00 seconds East a distance of 65.00 feet to the POINT OF BEGINNING of said centerline; thence North 14 degrees 05 minutes 11 seconds West a distance of 101.00 feet to the POINT OF TERMINUS of said centerline. Containing 303 square feet, more or less.

"CLOSED-IN-PLACE RCP2"
A 3 foot wide tract of land being a part of the West Half of the Southwest Quarter of Section 33, Township 19 North, Range 4 West, in North Union Township, Montgomery County, Indiana, the centerline of said tract of land being more particularly described as follows:



COMMENCING at the Northwest corner of said Southwest Quarter Section; thence North 89 degrees 32 minutes 53 seconds East (bearing system based on the Indiana State Plane Coordinate System NAD 1983 (1997) West Zone)along the North line thereof a distance of 30.00 feet to the West line of a tract of land described in Deed Record 258, Page 492 in the Office of the Recorder of Montgomery County, Indiana; thence South 00 degrees 15 minutes 49 seconds West along the West line thereof a distance of 28.00 feet; thence North 90 degrees 00 minutes 00 seconds East a distance of 65.00 feet to the POINT OF BEGINNING of said centerline; thence South 00 degrees 20 minutes 16 seconds West a distance of 218.61 feet to the POINT OF TERMINUS of said centerline. Containing 656 square feet, more or less.

"LIMITS OF ENGINEERED BARRIER"
A part of the West Half of the Southwest Quarter of Section 33, Township 19 North, Range 4 West, in North Union Township, Montgomery County, Indiana, being more particularly described as follows:


COMMENCING at the Northwest corner of said Southwest Quarter Section; thence North 89 degrees 32 minutes 53 seconds East (bearing system based on the Indiana State Plane Coordinate System NAD 1983 (1997) West Zone) along the North line thereof a distance of 30.00 feet to the West line of a tract of land described in Deed Record 258, Page 492 in the Office of the Recorder of Montgomery County, Indiana; thence South 00 degrees 15 minutes 49 seconds West along the West line thereof a distance of 57.00 feet; thence North 90 degrees 00 minutes 00 seconds East a distance of 72.50 feet to the POINT OF BEGINNING of this description; thence North 89 degrees 00 minutes 36 seconds East a distance of 12.00 feet; thence South 00 degrees 59 minutes 24 seconds East a distance of 14.00 feet; thence South 89 degrees 00 minutes 36 seconds West a distance of 12.00 feet; thence North 00 degrees 59 minutes 24 seconds West a distance of 14.00 feet to the POINT OF BEGINNING. Containing 168 square feet, more or less.

HORIZONTAL DATUM:
Coordinate system based on the Montgomery County Geodetic Monument Data for point number 007.
Horizontal Datum = NAD 1983 (1997) West Zone

NOTE:
This land description was prepared and is based exclusively upon record deed information and an ALTA/ACSM Land Title Survey for Raybestos Products Company, Inc., prepared by Deckard Land Surveying, LLC, Project Number 33194BMM, dated July 19, 2006, and recorded as Instrument Number 200606244. For purposes of the preparation of this Exhibit, no survey of the described real estate was performed and no monuments were set.



Stephen M. Cooper
Indiana Registered Land Surveyor #S0557
Date: 2/11/13

DETAIL DESCRIPTIONS		 <div>303 West Main Street, Knightstown, Indiana 46148 Ph:(765)345-5943 Toll Free:(888)593-2667 Fax:(765)345-5692 Web: www.coorconsulting.com Email: coorconsulting@aol.com</div>
Prepared For:	MYERS ENVIRONMENTAL, INC.	
Project Location:	FRICION HOLDINGS, LLC 1204 DARLINGTON AVENUE CRAWFORDSVILLE, IN 47933 PART OF W. 1/2 OF S 33 - T 19 N - R 4 W NORTH UNION TOWNSHIP MONTGOMERY COUNTY, INDIANA	
JOB #: 2010-128B		
FILE #: 2010-128B.DWG		
DATE: 2/11/13		
APPROVED BY: SMC		
DRAWN BY: MTL		

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DATE 6/13/11
RIN # 2017-005534
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EXHIBIT C

LIST OF SIGNIFICANT CONTAMINANTS OF CONCERN

Polychlorinated Biphenyl Arochlor 1248

ATTACHMENT C



PCB EXTRACTION SYSTEM

Integrated Chemistries, Inc.

CAPSUR Benefits

CAPSUR is a patented aqueous based solvent system developed specifically for the clean up of Polychlorinated Biphenyl (PCB) spills on solid surfaces. CAPSUR has the capability of being applied as a foam blanket which allows application to overhead, vertical and horizontal surfaces. CAPSUR is formulated to remove PCB's from concrete, asphalt, painted and metal surfaces on new and old spills. CAPSUR has demonstrated extraction efficiencies greater than 95 percent. This efficiency rate translates into less work, less time, and less product usage than conventional PCB cleaning products. CAPSUR easily vacuums up from surfaces. Surfaces are lightly rinsed with water, which is also vacuumed off. Easier removal results in lower labor cost. PCB cleanups with CAPSUR applied as a foam use dramatically less product than other PCB remediation products, resulting in less hazardous material to dispose of after the cleanup.

PRODUCT COVERAGE

Application coverage rate will vary with surface porosity and operator proficiency. The following are average coverage rates: Porous Concrete = 125 sq. ft. per gallon
Asphalt = 150 sq. ft. per gallon, Metals = 200 sq. ft. per gallon.

Painted surfaces should be patch tested prior to application as paint softening or discoloration may occur. ***CAPSUR is available in 5-and 55-gallon containers.***

Emergency information regarding ingestion, skin contact, eye contact or inhalation is included in the Material Safety Data Sheet (MSDS). If any of these emergencies occur, the Emergency Response number is: Chem-Tel, Inc. at 1-800-255-3924.

- High Extraction Rate
- Lower Labor Cost
- Successful on Old and New spills
- 90% Less Waste Disposal

For additional product information, contact:

INTEGRATED CHEMISTRIES, INC.

PO Box 10558

White Bear Lake, Minnesota 55110

Phone (651) 426-3224

Fax (651) 426-3114

Email: info@integratedchemistries.com

www.integratedchemistries.com

MATERIAL SAFETY DATA SHEET
(Complies with OSHA CFR 1910.1200, ANSI Z 400.1-1998)

SECTION 1: Chemical Product & Company Identification**Product Name:** CAPSUR®**Chemical Name:** Aromatic hydrocarbon mixture**Manufacturer Name & Address:** INTEGRATED CHEMISTRIES
P.O. Box 10558
White Bear Lake, MN 55110**Telephone Contact Number & Hours of Operation:** (651) 426-3224, 8 a.m. - 5 p.m. Central Standard Time**Website/E-mail:** www.integratedchemistries.com / info@integratedchemistries.com**Emergency Telephone Contact Number:** CHEM-TEL, INC.
Domestic: 800-255-3924
International: 813-248-0585**SECTION 2: Composition/Information on Ingredients**

The exact identity of the ingredients of this product are considered confidential because they are a trade secret. The hazards associated with these ingredients are addressed in this document. For specific information on these trade secret ingredients, assistance or information on the management of exposures or spills, please call PROSAR at 1-800-228-5635. The occupational exposure limits listed below apply to this product.

<u>Hazardous Ingredients^(*):</u>	<u>CAS No.</u>	<u>OSHA PEL</u>		<u>ACGIH TLV</u>	
		<u>TWA</u>	<u>STEL</u>	<u>TWA</u>	<u>STEL</u>
Naphthalene	91-20-3	10 ppm	NE	10 ppm	15 ppm
Trimethylbenzenes	25551-13-7	NE	NE	25 ppm	NE
Ethylene glycol monobutyl ether ^(skin)	111-76-2	50 ppm	NE	20 ppm	NE
Monoethanolamine	141-43-5	3 ppm	NE	3 ppm	6 ppm
Potassium hydroxide	1310-58-3	NE	NE	NE	2 mg/m ^{3(C)}
Cyclohexanol ^(skin)	108-93-0	50 ppm	NE	50 ppm	NE

*all ingredients in quantities > 1.0 % (0.1 % for carcinogens) that are **potentially** hazardous per OSHA definitions

NDA = no data available

NE = not established

Skin -potentially harmful amounts can be absorbed through the skin

C -ceiling value

Some States enforce the PEL's that OSHA promulgated in 1989, which were subsequently vacated by the U.S. Supreme Court. Check with your State OSHA agency to determine which PEL is enforced in your jurisdiction.

SECTION 3: Hazards Identification**EMERGENCY OVERVIEW**

Physical description: Clear green liquid

Odor: mild solvent odor

Potential Health Effects: **WARNING!** Causes eye and skin irritation. Vapors and mists are expected to cause upper respiratory tract irritation with coughing and nasal discharge. Vapors and mists may cause central nervous system depression with dizziness, drowsiness and incoordination. Harmful amounts may be absorbed through the skin. May be harmful or fatal if swallowed-potential aspiration hazard. Repeated or prolonged occupational exposure to solvents has been associated with permanent brain and nervous system damage. Repeated or prolonged exposure may cause skin allergic reactions and defatting of the skin (which can cause dermatitis). Personnel responding to a spill of this material should wear appropriate personal protective equipment.

Fire Fighting Measures: **Combustible liquid and vapor.** Keep away from heat, sparks or open flames.

NFPA RATING: Health - 2 Flammability - 2 Reactivity - 1 Special-NDA

HMIS RATING: Health - 2 Flammability - 2 Reactivity - 1 Protective Equipment - X

SECTION 4: First Aid Measures

Skin Contact: Remove contaminated clothing. Flush affected area with water for at least 15 minutes. Wash affected area with mild soap and water. Seek medical attention if symptoms develop and persist.

Ingestion: Immediately rinse mouth out and give sips of water (NEVER give anything by mouth to an unconscious person). DO NOT INDUCE VOMITING. Seek medical attention immediately.

Eye Contact: Immediately flush with plenty of water. Remove contact lenses (if easy to do) and continue flushing for at least 15 minutes. Seek medical attention immediately.

Inhalation: Remove to fresh air. Seek medical attention if breathing becomes difficult.

Antidotes/Notes to Physicians: No known antidote. This product is potentially an aspiration hazard.

SECTION 5: Fire Fighting Measures

Flashpoint: 145° F (63° C) COC

Autoignition temperature: NDA

Flammable Limits: LEL: 0.5 UEL: 6.0

Extinguishing media: Use water spray, fog, regular foam, dry chemical or carbon dioxide

Hazardous products of combustion: Carbon monoxide, carbon dioxide, nitrogen containing compounds (NO₂, NO_x), sulfur containing compounds (SO₂, SO_x)

Unusual fire and explosion hazards: **Combustible liquid and vapor.** Keep away from heat, sparks and flame. Containers may explode when heated. Cool containers exposed to heat and flame with water spray. When heated, vapors may form explosive mixtures with air and pose an explosion hazard indoors, outdoors, and in sewers. Do not direct a solid stream of water or foam into the burning material as this may cause spattering and

spread the fire. Water used to extinguish a fire should not be allowed to enter the drainage system.

Protective Equipment: Use NIOSH/MSHA approved SCBA and full protective gear.

SECTION 6: Accidental Release Measures

Extinguish all ignition sources immediately. Do not attempt to clean up chemical spills without appropriate personal protective equipment (see section 8). Do not touch or walk through spilled material. For small spills, absorb or cover with dry earth, sand or other non-combustible material and transfer to sealable containers for disposal. For large spills, dike around spill for later disposal. Prevent entry into waterways, sewers, basements, or confined areas. Do not get water inside containers. Ventilate area and wash spill site after material pickup is complete. See section 13 for information on the disposal of recovered material.

SECTION 7: Handling & Storage

Handling: Avoid eye and skin contact. Avoid breathing mists and vapors.

Storage: Store upright in a cool, dry, well-ventilated area out of direct sunlight. Store away from incompatible materials (see Section 10). Keep containers tightly closed at all times. Protect containers from physical damage. Do not reuse container. Use with proper personal protective equipment (see Section 8). Keep out of reach of children.

SECTION 8: Exposure Controls & Personal Protective Equipment

Engineering Controls: Use local exhaust in processing or storage areas. If any of the limits in section 2 are exceeded, local ventilation or respiratory protection may be necessary.

Skin: Protective gloves recommended to prevent skin contact. Contact glove manufacturer for more information.

Eye Protection Wear safety goggles.

Respiratory: If industrial hygiene surveys show that the exposure limits in Section 2 are exceeded, use of a NIOSH approved respirator is necessary. Seek professional advice prior to respirator selection or use. Follow OSHA respirator regulations (29 CFR 1910.134). Use a positive pressure air supplied respirator if there is a potential for an uncontrolled release, exposure levels are not known, or under any other circumstances where air-purifying respirators may not provide adequate protection.

SECTION 9: Physical & Chemical Parameters

Physical State: Liquid

Odor: solvent odor

Vapor Density (air = 1): 4.8

Boiling Point: 212°F (100°C)

Viscosity: NDA

Specific Gravity: 0.965-0.985 @ 60°F (16°C)

Solubility in water: Moderate

Appearance: Clear green

Vapor Pressure: Negligible

Percent Volatile by Volume: 60%

Freezing Point: NDA

Melting Point: < 32°F (0°C)

Bulk Density: NDA

pH: 11.0 (undiluted)

SECTION 10: Stability & Reactivity

Stability: Stable

Incompatible Materials and conditions to avoid: Rubber, plastic, strong acids, strong oxidizing agents, heat, temperatures approaching the flashpoint.

Hazardous polymerization: Will not occur.

Hazardous decomposition products: Carbon monoxide, carbon dioxide, nitrogen containing compounds (NO₂, NO_x), sulfur containing compounds (SO₂, SO_x)

SECTION 11: Toxicological Information

There are no product-specific toxicological data available addressing either acute or chronic exposure. Exposure to this product can occur by eye and skin contact, inhalation of vapors or mists, and ingestion. Skin contact is expected to cause moderate to severe irritation. Prolonged or repeated skin contact may cause skin allergic reactions (sensitization) and defatting of the skin resulting in dermatitis. Harmful amounts may be absorbed through the skin. Absorption of large amounts may cause headache, nausea, vomiting and dizziness. Eye contact is expected to cause moderate to severe irritation. Exposure to mists or vapors is expected to cause upper respiratory tract irritation (with coughing and nasal discharge), eye irritation, and central nervous system depression (with headache, weakness, dizziness, nausea and loss of coordination and judgment. Exposure to high concentrations of mists or vapors may cause liver and kidney injury, asthmatic bronchitis, narcosis, pulmonary edema, and possibly death. Ingestion is expected to cause nausea, vomiting, and diarrhea along with severe irritation to the mouth, throat, esophagus, and gastrointestinal tract. Eye changes such as cataract formation and retinal damage have been documented in animal studies following ingestion of naphthalene. Aspiration of this product into the lungs may cause chemical pneumonitis, a potentially fatal condition, which is initially characterized by coughing, choking, difficulty breathing, and possibly pulmonary edema and hemorrhage. There were no data available for this product addressing potential reproductive, developmental, mutagenic or carcinogenic effects following exposure to this product.

Ingredient Based Information: The exact ingredients of this product are considered a trade secret.

Carcinogens: None per OSHA, NTP, or IARC

Target Organs: All tissue (moderate to severe irritation), eyes, lungs, central nervous system, liver, kidneys.

Medical Conditions that May be Aggravated by Exposure: Respiratory diseases (e.g. bronchitis, asthma), liver, kidney and central nervous system disorders.

SECTION 12: Ecological Information

Ecotoxicity: NDA

Environmental Fate: NDA

SECTION 13: Disposal Considerations

This material (as packaged) may be considered a hazardous waste. Be aware that the waste owner has responsibility for final disposal. Regulations may also apply to empty containers, liners or rinsate. Laws may change or be reinterpreted; state and local regulations may be different from federal regulations. This information applies to materials as manufactured; contamination or processing may change waste characteristics and requirements.

SECTION 14: Transport Information

DOT Hazard Description: Combustible liquid, n.o.s., combustible liquid, NA1993, PGIII

This shipping description is only valid for use within the United States of America.

SECTION 15: Regulatory Information

Chemical Inventories: The components of this product listed in Section 2 are listed on the TSCA Inventory List, the DSL/NDSL and the EINECS.

Reportable Quantities (RQ) (40 CFR table 302.4):

Naphthalene (CAS#91-20-3)	100 lbs (45.4 kgs)
Dodecylbenzyl sulfonic acid (CAS# 27176-87-0)	1000 lbs (454 kgs)
Potassium hydroxide (CAS# 1310-58-3)	1000 lbs (454 kgs)

SARA TITLE III (Superfund Amendments and Reauthorization Act):

Section 302 Extremely Hazardous Materials (40 CFR 355): None listed

Sections 311/312 Hazard Categories (40 CFR 370):

Immediate (Acute) Health Effects:	YES
Delayed (Chronic) Health Effects:	YES
Fire Hazard:	YES
Sudden Release of Pressure Hazard:	NO
Reactivity Hazard:	NO

Section 313 Toxic Chemical Release Reporting (40 CFR 372.65(a)): Naphthalene (CAS# 91-20-3), 1,2,4-trimethyl benzene (CAS# 95-63-6) and cyclohexanol (CAS# 108-93-0).

STATE REGULATORY INFORMATION: Since each state has the authority to promulgate standards more stringent than the federal government, this section cannot provide an inclusive list of all state regulations, which apply to this product. Questions related to state regulations should be directed toward local officials.

SECTION 16: Other Information

For additional information, refer to the 2000 North American Emergency Response Guidebook and the ACGIH Documentation of the Threshold Limit Values.

This information is provided in good faith, but without express or implied warranty.

This MSDS was prepared by Environmental Health & Safety, Inc., St. Paul, MN, 55116, USA

ATTACHMENT D



KEY #635 MVT MOISTURE VAPOR TREATMENT

DESCRIPTION

Key #635 MVT is a two component, modified epoxy system designed to seal concrete and reduce moisture vapor transmission prior to applying finished flooring.

Key #635 MVT has proven to reduce moisture vapor emissions and be resistant to damage from high alkalinity.

Key #635 MVT is an environmentally friendly material containing no hydrocarbons or other solvents making it zero (0) VOC.

KEY ADVANTAGES

- Reduces moisture vapor emission rate through concrete
- Resistance up to 8 lbs MVER on the Calcium Chloride Test (ASTM F-1869)
- Resistance up to 85% RH on the RH Probe Test (ASTM F-2170)
- Provides excellent resistance to highly alkaline conditions
- Excellent bond to properly prepared concrete
- Convenient 2:1 mixing ratio
- High physical properties
- Can be rapidly surfaced with a variety of finished flooring materials

KEY CONSIDERATIONS

- Substrate temperature must be a minimum of 55°F before, during and 72 hours after installation.
- Must have effective vapor barrier directly under substrate.
- For use only on properly prepared surfaces; must be free of dirt, waxes, curing agents and other foreign materials.
- Does not function as a crack reflective membrane.
- Does not prevent damage or disbondment caused by ASR (Alkali Silica Reaction), high levels of unreacted silicates or metallic shake-on hardener treated concrete.

TYPICAL USES

- **Key #635 MVT** is designed as a negative side moisture vapor retarder to reduce moisture vapor transmission through concrete as required by moisture vapor sensitive floor coverings.
- **Key #635 MVT** can also be an effective primer for fast recoat under Key Resin flooring systems.

COLOR

Translucent Red

COMPOSITION

KEY #635 MVT is a highly cross-linked, alkaline resistant epoxy composition.

TYPICAL PROPERTIES & PERFORMANCE DATA

Tensile Strength	ASTM-D-638	10,400 psi
Tensile Elongation	ASTM-D-638	2 - 4%
Modulus of Elasticity	ASTM-D-638	2500 psi
Bond Strength to Concrete	ASTM-D-4541	400-500 psi 100% Concrete Failure
Permeability	ASTM E-96	1 Coat (10-12 mils) - 0.09 Perms 2 Coats (20 mils total) - 0.04 Perms
Water Vapor Transmission	ASTM-E-96	1 coat - 0.023 2 coats - 0.012
Alkaline Resistance	7 day Immersion 14 day Immersion ASTM-D-1308	10% Sodium Hydroxide - unaffected 50% Sodium Hydroxide - unaffected 10% Sodium Hydroxide - unaffected 50% Sodium Hydroxide - unaffected
Hardness Shore D	ASTM-D-2240	85
VOC		Zero
Water Absorption	ASTM-D-570	nil
Mix Ratio		2:1 by Volume
Pot Life/Working Time		25-35 Minutes
Recoat Time Minimum		4-6 Hrs. at 75 degrees F.
Maximum		72 Hrs.

APPLICATION

SURFACE PREPARATION

Surface preparation is the most critical portion of any successful resinous flooring system. All substrates must be properly prepared as outlined in Key Resin Company's Technical Bulletin #1. Work must be performed by trained or experienced contractors or maintenance personnel. **Key #635 MVT** is a moisture vapor suppressant for concrete substrates. Surface and air temperature must be a minimum of 55°F during installation and cure.

Concrete surface must be free of dirt, waxes, curing agents, any other foreign materials, and must be structurally sound. Surfaces should be vacuum shot blasted to "open" surface porosity or by grinding with coarse grit diamonds or stones. Surface profile must be a minimum CSP-3 to CSP-5 profile according to International Concrete Repair Institute Guideline #03732. Slabs that have been treated with silicate based densifiers or metallic shake-on hardeners may not be suitable for **Key #635 MVT**, consult with Key Resin for further details. Core sample testing should be considered to verify the presence of these contaminants.

Concrete surfaces should be tested for moisture transmission according to ASTM-F-2170 (Relative Humidity in Concrete Floor Slabs using in situ probes) and ASTM-F-1869 (Measuring Moisture Vapor Emission Rate of Concrete Subfloor using Anhydrous Calcium Chloride). Standards are available for purchase at www.astm.org.

Key #635 MVT must be applied a minimum of 12-14 mils above the highest points of the surface profile for readings up to 8 pounds on the calcium chloride test and/or readings up to 85% on the relative humidity probe test. For higher readings consult with **Key Resin Technical Services** regarding alternate moisture vapor control materials. Applying two thinner coats versus one thicker coat is recommended to help ensure the elimination of outgassing pinholes or thin spots. Refer to the detailed Installation Instructions document for important additional requirements.

Fill all cracks and non-moving joints with **Key #635 MVT**. If material continues to disappear into the void, add fumed silica to get a gel consistency and "putty" into the void to completely seal. Detailing with **Key #580** crack isolation membrane and fiberglass scrim is done after the **Key #635 MVT** application. If joint is to be exposed through the finished flooring system and filled with flexible joint filler, the bottom and sides of joint should be coated with **Key #635 MVT**.

MIXING & SPREADING

Stir resin and hardener separately prior to mixing. Mix ratio is 2 parts resin Part A to one part hardener Part B. Pour together and mix thoroughly for 60-90 seconds. For a two coat application, apply first coat at the rate of 115-125 sq.ft./gal. Apply extra material to areas showing penetration and soaking into the concrete. Allow to cure. Apply second coat at the rate of 160-200 sq.ft./gal. All areas should be pinhole free, show a uniform gloss and a uniform 12 mils minimum thickness above the highest points of the surface profile.

Maximum recoat time for **Key #635 MVT** is 72 hours. Depending on the flooring system to be applied over **Key #635 MVT**, it may be advantageous to apply **Key #502** primer or lightly broadcast 30 mesh silica into the second coat of **Key #635 MVT** to help achieve a good mechanical bond or extend the recoat time beyond 72 hours. Refer to detailed Installation Instructions document for important additional requirements.

For areas showing moisture vapor greater than 8 lbs./1000sq.ft/24 hours or relative humidity probe readings greater than 85% consult with **Key Resin Technical Services**.

AVAILABILITY

Key Resin Products are available throughout the United States, Canada, and a number of other countries. Contact the **KEY REPRESENTATIVE** in your area for details.

TECHNICAL SERVICE

Key Resin Company and **KRC Associates, Inc.** provide services and consultations on material selection, specification, troubleshooting, and other information on the proper repair and protection of concrete surfaces. **KEY REPRESENTATIVES** and **Key Resin Technical Services** are available to assist you. CALL (888) 943-4532 or visit www.keyresin.com.

WARRANTY

Key Resin Company ("Key") warrants for a period of one (1) year that its products will be free of manufacturing defects and will be in conformity with published specifications when handled, stored, mixed and applied in accordance with recommendations of **Key**. If any product fails to meet this warranty, the liability of **Key** will be limited to replacement of any non-conforming material if notice of such non-conformity is given to **Key** within (1) one year of delivery of materials. **Key** may in its discretion refund the price received by **Key** in lieu of replacing the material. No customer, distributor, or representative of **Key** is authorized to change or modify the published specifications of this warranty in any way. No one is authorized to make oral warranties on behalf of **Key**. In order to obtain replacement or refund the customer must provide written notice containing full details of the non-conformity. **Key** reserves the right to inspect the non-conforming material prior to replacement. EXCEPT FOR THE EXPRESSED WARRANTY STATED ABOVE, THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANT-ABILITY OR FITNESS FOR PURPOSE. **KEY'S** OBLIGATION SHALL NOT EXTEND BEYOND THE OBLIGATIONS EXPRESSLY UNDERTAKEN ABOVE AND **KEY** SHALL HAVE NO LIABILITY OR RESPONSIBILITY TO THE PURCHASER OR ANY THIRD PARTY FOR ANY LOSS, COST, EXPENSE, DAMAGE OR LIABILITY, WHETHER DIRECT OR INDIRECT, OR FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.